A REASSESSMENT OF THE SIGNIFICANCE OF THE COFFEY SITE (14PO1), TUTTLE CREEK LAKE, POTTAWATOMIE COUNTY, KANSAS

By

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Submitted to the graduate degree program in Anthropology
and the Graduate Faculty of the University of Kansas
in partial fulfillment of the requirements for the degree of
Master of Arts.

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Chairperson

Committee members:

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Date Defended: May 12, 2010

The Thesis Committee for Janice A. McLean certifies
that this is the approved version of the following thesis:

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ABSTRACT

The Coffey site (14PO1) is one of the significant stratified archeological records of the Middle Holocene period from ca. 6000–5000 B.P. Faunal and floral remains excavated from Coffey during the 1970s still contribute to studies of prehistoric subsistence. In 1977, the Coffey site was listed in the National Register of Historic Places under Criterion D for yielding significant information about the Archaic period. Following years of neglect, geoarcheological investigations were conducted in fall 2009 (1) to define the geomorphology and stratigraphy of the site, (2) to delineate the lateral extent of the artifact-bearing deposits, and (3) to determine the numerical age of those deposits. This thesis characterizes and interprets the cultural materials salvaged from along the cutbank or two backhoe trenches. The archeological evidence supports the finding that the Coffey site retains sufficient research potential and integrity to merit continued inclusion in the National Register under Criterion D.

Two supplemental files are included with this thesis. Appendix A is an oversize (11 in x 17 in) PDF color diagram of the stream bank at 14PO1 that depicts the spatial pattern of the stratigraphic units and locations of cutbank profiles and cultural deposits. Appendix B is a Microsoft Excel worksheet that contains the inventory of artifacts and attribute data from the 2009 investigations.

ACKNOWLEDGMENTS

As a non-traditional student with a demanding, full-time career as an archeologist, I thank my committee chair, Dr. Jack Hofman, and committee members, Dr. Rolfe Mandel and Dr. R. Christopher Goodwin, for their patient, pragmatic mentoring. This thesis represents a long overdue solution to a seemingly intractable set of problems, and I deeply appreciate the spirit of creativity and cooperation that made it possible.

I extend special thanks to my friend and colleague, Ms. Shannon Ryan, for her encouragement and remarkable document formatting skills. Other mentors, friends and colleagues who played a formative role in my gradual education include: Dr. Darcy Morey, Dr. Donna Roper, Mr. Martin Stein, Mr. Jerome "Pete" Bussen, Mr. and Mrs. Dan Busse, Mr. Harlan House, Mr. Marlin Hawley, Mr. Fred Scott, Dr. Tim Weston, Ms. Anita Frank, Ms. Virginia Wulfkuhle, Ms. Jeannette Blackmar, Ms. Linda Greatorex, Dr. Mary Adair, Dr. John Hoopes, Dr. Al Johnson, Dr. Anta Montet-White, Dr. Brad Logan, Dr. Lauren Ritterbush, Dr. Brent Buenger, Dr. Will Banks, Dr. Stacey Lengyel, Dr. Chris Widga, Dr. Matthew E. Hill, Jr., Dr. Margaret Beck, Ms. Kale Bruner, and Dr. Virginia L. "Ginny" Hatfield.

Finally, I express my gratitude to my entire extended family for their love, support, and encouragement. I especially thank my beloved husband, Mr. Robert Conard, for his kindness, generosity, catering expertise, and cheerful willingness to moonlight as my unpaid research assistant.

The fall 2009 investigations at the Coffey Site were conducted by the Lawrence, Kansas office of R. Christopher Goodwin & Associates, Inc. (RCG&A) under contract to the United States Army Corps of Engineers (USACE), Kansas City District. I thank Mr. Tim Meade, Kansas District Archeologist, for his support and assistance throughout this project. Mr. Paul Weidhaas (Tuttle Creek Lake) coordinated a site visit, supplied canoe transportation, and loaned aerial photos to RCG&A that were instrumental in helping determine the extent of erosion that has occurred at the site since the 1950s.

Dr. Mandel served as Principal Investigator for the project under sub-contract to RCG&A. Dr. Hofman contributed his keen insight and helpful advice regarding the recovery and analysis of

archeological materials from the Coffey site. Dr. Goodwin's generous support of this project is gratefully acknowledged. I am privileged to have the opportunity to learn inter-disciplinary archeological research methods and practice from these fine gentlemen scholars.

Manhattan Trenching, Inc. was responsible for the heavy machinery operations at the site, and backhoe operators Mr. Alan Shelton and Mr. Robert Taylor deserve thanks for their efforts.

Mr. Paul Reust of Frankfort, KS visited the site in the company of his daughter, Mrs. Julie Caffrey. Mr. Reust encouraged a follow-up visit to his home in Frankfort to document his extensive archeological collection, which includes numerous artifacts from the Coffey site. Dr. Hofman, Mrs. McLean, and Ms. Ryan traveled to Frankfort on December 18, 2009 to examine and collect preliminary documentation on Mr. Reust's collection. The documentation produced during that trip is presented in Appendix C.

Dr. Bob Hoard and Ms. Christine Garst facilitated access to Coffey site documentation, photographs, and 35 mm slides housed at the Kansas State Historical Society, Topeka. Dr. Hoard also visited the Coffey site to observe the geoarcheological investigation in progress.

Dr. Mary Adair, University of Kansas Archaeological Research Center (KUARC), provided access to archival materials, and scanned slides from the Coffey site collection for project use. Dr. Adair allowed use of the KUARC flotation tank to process samples salvaged from the oxidized Gunder Member, and assisted Mr. Nick Kessler (RCG&A) with the analysis of the flotation sample contents.

Field investigations during the fall 2009 investigations involved the following RCG&A personnel: Mrs. Janice McLean (Project Manager), Ms. Shannon Ryan, Mrs. Sarah Sanders, Mr. Alan Potter, Mr. Eric Skov, Mr. Adam Hefling, Mr. Jordan Jennings, Ms. Teresa Royston, and Ms. Naomi McCormick. Post-fieldwork graphics and GIS support were provided by Mr. Alan Potter (RCG&A), with additional graphics produced by Ms. Laura Murphy (KGS). RCG&A employees Mr. Kessler, Ms. Dawn Munger, and Mrs. Jolene Munger assisted with flotation processing and analysis, artifact cataloging, and data entry tasks, respectively. Dr. Mandel, Mrs. McLean, Ms. Ryan, Mr. Potter, and Mr. Kessler authored the project report.

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CHAPTER 1: INTRODUCTION

In fall 2009, R. Christopher Goodwin & Associates, Inc. (RCG&A) conducted a geoarcheological investigation and National Register reevaluation of the Coffey site (14PO1), located within the boundaries of U.S. Army Corps of Engineer's Tuttle Creek Lake Project in northwestern Pottawatomie County, Kansas (Figure 1.1). Since 1977, the Coffey site has been listed in the National Register of Historic Places under Criterion D for the unique archeological information it has yielded on the Archaic occupation of the Central Plains. From 1970 to 1975, Kansas State University and the University of Kansas conducted extensive data recovery excavations at Locality I (1970–1975), and limited test excavations at Locality II (1973–1975) (Schmits 1981). Since the conclusion of fieldwork in 1975, shoreline erosion has severely compromised the integrity of the remaining site deposits.

The U.S. Army Corps of Engineers sponsored this reevaluation of the Coffey site in accordance with its resource management responsibilities as specified in Section 110 of the National Historic Preservation Act [NHPA] of 1966, as amended, and its implementing regulations ("Protection of Historic and Cultural Properties," Title 36 CFR part 800). These investigations were conducted in partial satisfaction of a contract (W912DQ-09-P-1042) issued to R. Christopher Goodwin & Associates, Inc. by the U.S. Army Corps of Engineers, Kansas City District. Funding for this project was provided by the American Recovery and Reinvestment Act of 2009.

Prior to this investigation, the first fieldwork conducted at the Coffey site since 1975, the full extent of the damage to the site was unknown. The cultural deposits at the Coffey site are exposed in a steep, nearly vertical bank along a bend of the Big Blue River. As the river current flows through the bend, it undercuts the bank causing massive slab erosion to occur. The most recent condition assessment, which was completed in 1982, characterized the site as severely damaged by erosion and imminently threatened by total destruction (Miller and Schmits 1982:12). In 2001, a Historic Properties Management Plan prepared for Tuttle Creek Lake recommended that future historic preservation resources directed at

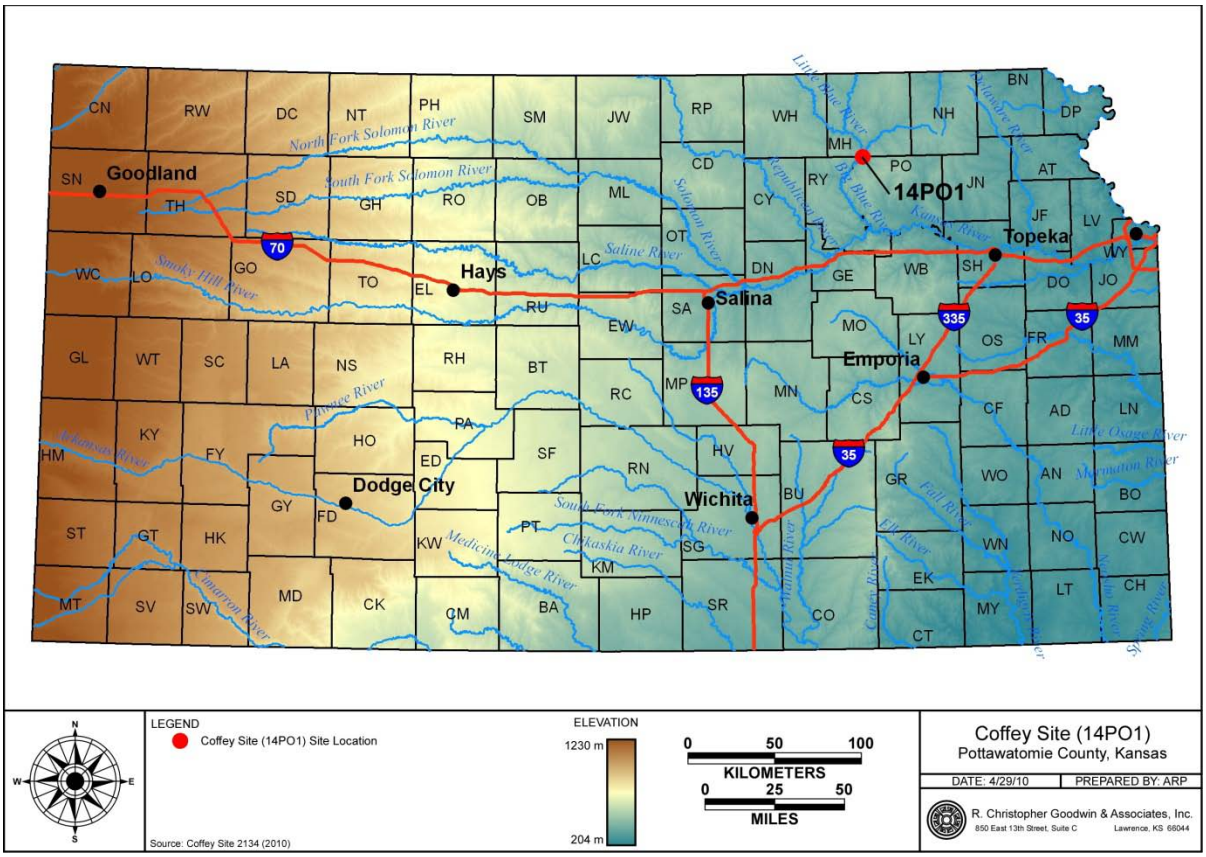

Figure 1.1 Map showing the general location of the Coffey site (14PO1) in Kansas.

the Coffey site focus on characterizing, delineating and assessing the Late Archaic / Early Woodland component previously encountered at Locality II (Lucido 2001).

Although diagnostic artifacts representing the Paleoindian to Late Woodland periods have been recovered from its surface, the Coffey site was listed in the National Register of Historic Places (NRHP) under eligibility Criterion D for yielding significant information about the Archaic period occupations of the central Plains from ca. 5500–5000 B.P. The archeological record of Locality 1 consisted of a rich array of features, faunal remains, and artifacts contained within 12 stratified cultural horizons in Unit III, a paleochannel fill deposited between 6000–5000 B.P. The NRHP nomination form credits the University of Kansas (KU) excavations of Locality I (1970, 1972–1975) for documenting one of the least known periods in Plains prehistory (Stein 1975).

During the 1973–1975 KU excavations at Locality II of the Coffey site, five additional stratified cultural horizons were documented in Unit IV, a paleochannel fill deposited between 2500–2000 B.P. (Schmits 1981). The eligibility status of the Unit IV cultural horizons is not addressed in the NRHP nomination form. Although additional cultural horizons were anticipated at greater depth within Unit IV, further excavations could not be completed due to the high water table. The cultural materials recovered from Unit IV at Locality II included Walnut Valley corner-notched projectile points, a diagnostic artifact of the Late Archaic Walnut phase (3150–1950 B.P.) (Blackmar and Hofman 2006:Table 4.2; Grosser 1970, 1973; Schmits 1980, 1981)

In keeping with prior management recommendations (Lucido 2001), the 2009 project was designed to contribute basic information necessary for a reevaluation of the Coffey site's NRHP eligibility status under Criterion D. In particular, the scope of work requested resolution of the eligibility status of the stratified Late Archaic / Early Woodland occupations encountered at Locality II in 1973–1975. Three geoarcheological tasks were identified: (1) to define the geomorphology and stratigraphy of the site, (2) to delineate the lateral extent of the artifact-bearing deposits, and (3) to determine the numerical chronology of the archeological components identified during the study. The scope of work also specified the salvage recovery of artifacts and features encountered or displaced as a result of the geoarcheological investigations.

RCG&A sub-contracted Dr. Rolfe Mandel of the Kansas Geological Survey to direct the geoarcheological investigations, which consisted of two backhoe trenches, 14 Giddings soil cores, cutbank inspection, and preparation of three cutbank profiles. Dr. Mandel identified a complex mosaic of Holocene and late-Wisconsinan landform sediment assemblages across the site, and delineated areas where cultural deposits of significance are likely or unlikely to occur in buried context.

An analysis of georeferenced historic aerial photos demonstrated that Locality II, the intended focus of the project, was completely consumed by erosion sometime between 1981 and 1991. Accordingly, the focus of the project shifted to the delineation and characterization of extant cultural deposits found in the vicinity of Locality I. The results of the geoarcheological investigation are detailed

in a project report of limited distribution (Mandel et al. 2010). The report concluded that although erosion has severely diminished the overall areal extent of the Coffey site, the newly identified cultural deposits in the Severance Formation, the reduced Gunder Member (Unit IV), and the oxidized Gunder Member (Unit III) retain sufficient significance and integrity to merit continuing NRHP status under Criterion D due to its potential to yield information important in prehistory.

This thesis consists of extracted and expanded versions of the archeological methods and results sections of the project report (Mandel et al. 2010). Full accounts of the previous investigations at the Coffey site, its natural setting, and the results of the geoarcheological investigations are contained in the project report (Mandel et al. 2010). Appendix A is a tabloid-size color diagram of the stream bank at 14PO1 that shows the spatial pattern of the stratigraphic units and locations of cutbank profiles, archeological features, and isolated artifacts (adapted from Mandel et al. 2010:Figure 5.1). Appendix B is a Microsoft Excel spreadsheet that contains the 2009 artifact inventory and attribute data summarized in Chapter 3 (same as Mandel et al. 2010: Appendix B). Appendix C provides basic documentation on Mr. Paul Reust's private collection of artifacts from the Coffey Site (adapted from Mandel et al. 2010: Appendix A).

CHAPTER 2: RESEARCH DESIGN & METHODS

Research Design

In 1977, the Coffey site was listed in the National Register of Historic Places (NRHP) under Criterion D for the unique archeological information it has yielded regarding the Archaic occupation of the Central Plains from 5055– 5463 B.P. (Stein 1975). The Coffey site was nominated for inclusion in the National Register because of large-scale archeological investigations that were conducted by the University of Kansas and Kansas State University from 1970– 1975 (O'Brien et al. 1973; Schmits 1976, 1978, 1980, 1981; Stein 1975). Since the conclusion of fieldwork in 1975, on-going shoreline erosion has severely compromised the integrity of the remaining cultural deposits (Miller and Schmits 1982; Lucido 2001).

In 2009, U.S. Army Corps of Engineers, Kansas City District received limited funding from the American Recovery and Reinvestment Act in support of archeological testing to determine the present condition of the Coffey site. R. Christopher Goodwin & Associates, Inc. was awarded the contract (W912DQ-09-P-1042). Ms. Janice McLean was designated the Project Manager for R. Christopher Goodwin & Associates, Inc. Dr. Rolfe Mandel, Kansas Geological Survey, agreed to act as Principal Investigator, with Dr. Jack Hofman serving as Consulting Archeologist.

The 2009 project was designed to contribute basic geoarcheological data necessary for a reevaluation of the Coffey site's NRHP eligibility status under Criterion D. In consultation with Mr. Tim Meade, Kansas City District Archeologist, three tasks were identified: (1) to define the geomorphology and stratigraphy of the site, (2) to delineate the lateral extent of the artifact-bearing deposits, and (3) to determine the age of archeological components identified during the study. The research design also specified the salvage recovery of artifacts and features encountered or displaced as a result of the geoarcheological investigations. Finally, the scope of work requested resolution of the eligibility status of the stratified Late Archaic / Early Woodland occupations discovered at Locality II in 1973, when artifacts were observed eroding out of the cutbank about 150 meters downstream from Locality I (Figure 2.1).

During the KU investigations of the 1970s, Larry Schmits identified and described five major depositional units (Units I-V) at the Coffey site (1976). Schmits (1976) described Unit I as a Pleistocene river terrace, Unit II as a Holocene terrace or channel fill inset against Unit I, Units III and IV as channel fill deposits that developed from the aggradation of oxbow lakes, and Unit V as a floodplain deposit (Figure 2.2). The cultural deposits excavated at Locality I were contained primarily in Unit III, while the deposits at Locality II were contained within Unit IV (Schmits 1981).

Figure 2.1 An aerial view of the Coffey site in 1975 showing the relative positions of Localities I and II, the Big Blue River and Spring Creek (adapted from Mandel et al. 2010). Source: Archival 35 mm color slide scanned courtesy of KUARC.

From 1973–1975, approximately 40 square meters were excavated at Locality II (Schmits 1981:158). Five cultural strata (Horizons IV-1 to IV-5) were identified in Unit IV before the water table was encountered and excavations ceased (Schmits 1981:158). Two uncalibrated radiocarbon dates obtained on wood charcoal, 2480±55 ^{14}C yr B.P. (DIC-1358) and 2320±60 ^{14}C yr B.P. (DIC-1357), associate these occupations with the Late Archaic Period (Hoard and Banks 2006:292-293). Cultural materials recovered from Locality II included four hearth features, one pit feature, charcoal, chipped stone, animal bones, and hearthstones (Schmits 1981:160). Unfortunately, a review of georeferenced

historic aerial photos demonstrated that Locality II was consumed by erosion sometime between 1981 and 1991 (Figure 2.3).

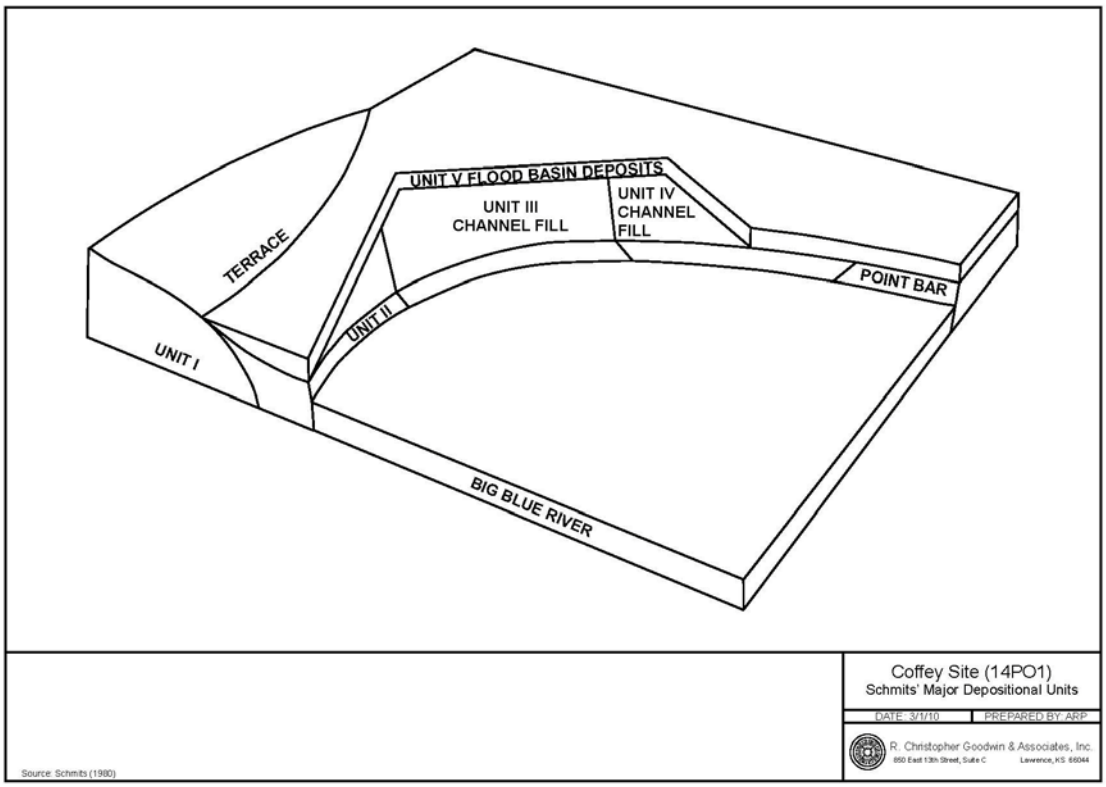

Figure 2.2 Block diagram of major depositional units identified at 14PO1 by Larry Schmits (adapted from Mandel et al. 2010; Schmits 1980: Figure 41).

Accordingly, once Locality II was determined to have been destroyed, the focus of the project shifted to the delineation and sampling of cultural deposits observed along the exposed cutbank at Locality I, and to the characterization of several newly defined stratigraphic contexts located to the north and east of Locality I (Appendix A; Figure 2.4). The research questions utilized in the 1970s investigations of Locality I involved exploring temporal variability in activities, seasonality, settlement and subsistence patterns. Artifacts, features, faunal and floral assemblages recovered from Unit III were aggregated by stratified horizon-levels to facilitate systematic comparisons between levels (Schmits 1976, 1978, 1980, 1981). Numerous studies attest to the ongoing research significance of the excavated floral and faunal assemblages obtained from Unit III at the Coffey site through systematic flotation and water-

screen recovery methods. Because of the nature of their recovery, these highly significant samples continue to be utilized actively in discussions of focal vs. diffuse (broad-spectrum) subsistence strategies during the Archaic period (Hofman 1996:93; Logan 1996; Unruh 2008; Wedel 1986; Widga 2006).

For the cultural deposits newly identified in 2009, the primary research objectives involved establishing their stratigraphic context, delineating their spatial extent, and collecting samples to obtain numerical age determinations through radiocarbon dating. Artifacts incidentally encountered during the execution of these tasks were collected for analysis, but systematic archeological testing was not a component of the 2009 research design.

In fall 2009, the geoarcheological investigations entailed preparation of three cutbank profiles, use of a Giddings hydraulic probe to collect 14 continuous, intact 2.5 inch-diameter soil cores, and excavation of two backhoe trenches to determine the horizontal and vertical boundaries of the extant and newly identified stratigraphic and cultural deposits. Other tasks included the preparation of a topographic map, installation of a permanent concrete datum (Figure 2.5), and the salvage of artifacts and archeological features encountered during the course of the investigations. Tasks completed in winter 2010 included the laboratory processing and analysis of recovered artifact samples, the submission of samples for radiocarbon dating, and report preparation.

At present, the results of the geoarcheological investigations are detailed in a project report (Mandel et al. 2010). Mandel identified a complex mosaic of Holocene and late-Wisconsinan landform sediment assemblages across the site, and delineated areas where cultural deposits of significance and integrity are likely or unlikely to occur in buried contexts. J. McLean analyzed the cultural materials recovered during the 2009 field investigations. This thesis is a supplemental report that details the archeological evidence and results in a more widely accessible format.

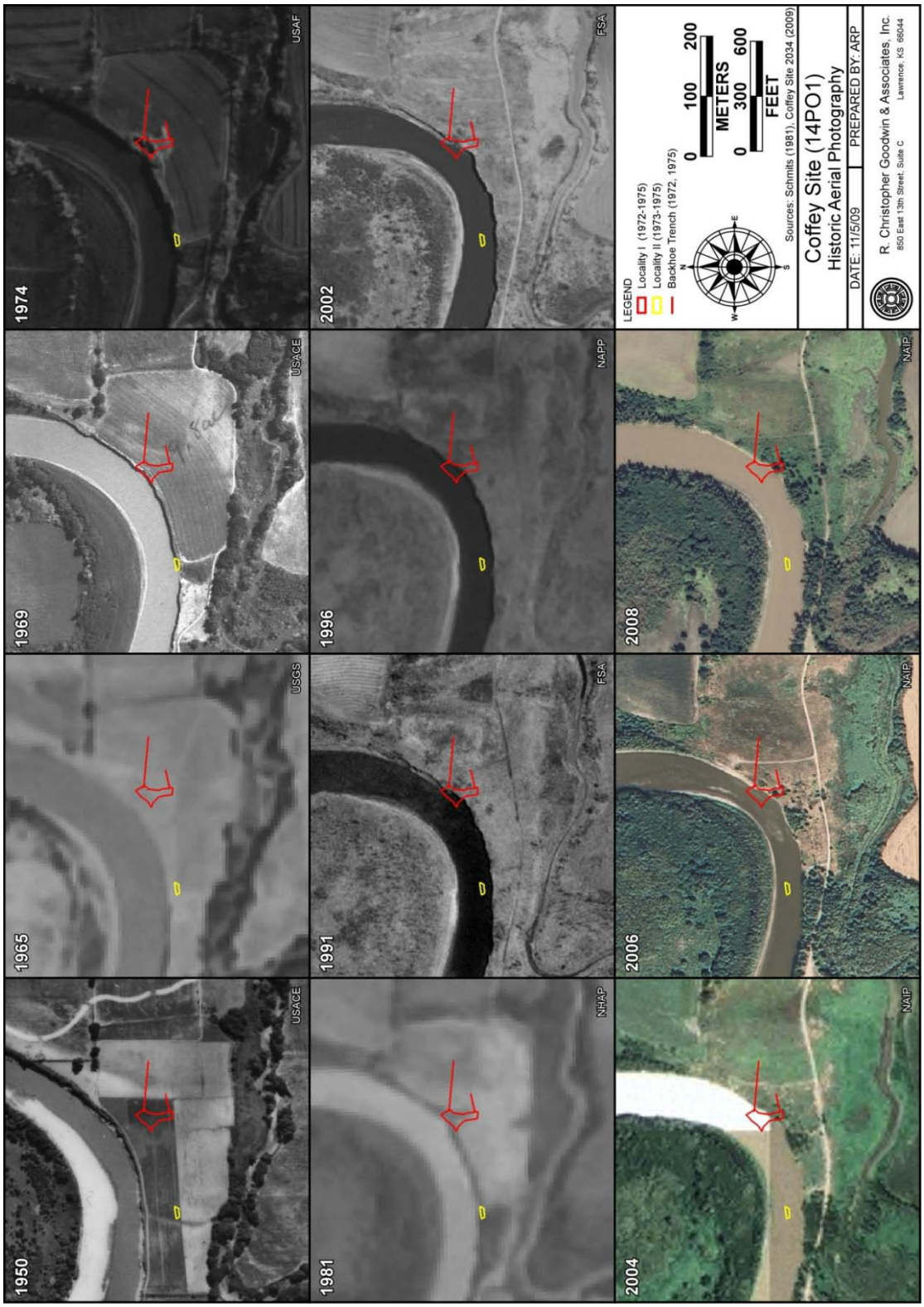

Figure 2.3 Sequence of historic aerial photographs of the Coffey site that document the lateral migration of the Big Blue River from 1950 to 2008 (adapted from Mandel et al. 2010). The locations of excavation blocks and backhoe trench positions (per Schmits 1981:Figure 9) are displayed to provide fixed points of reference.

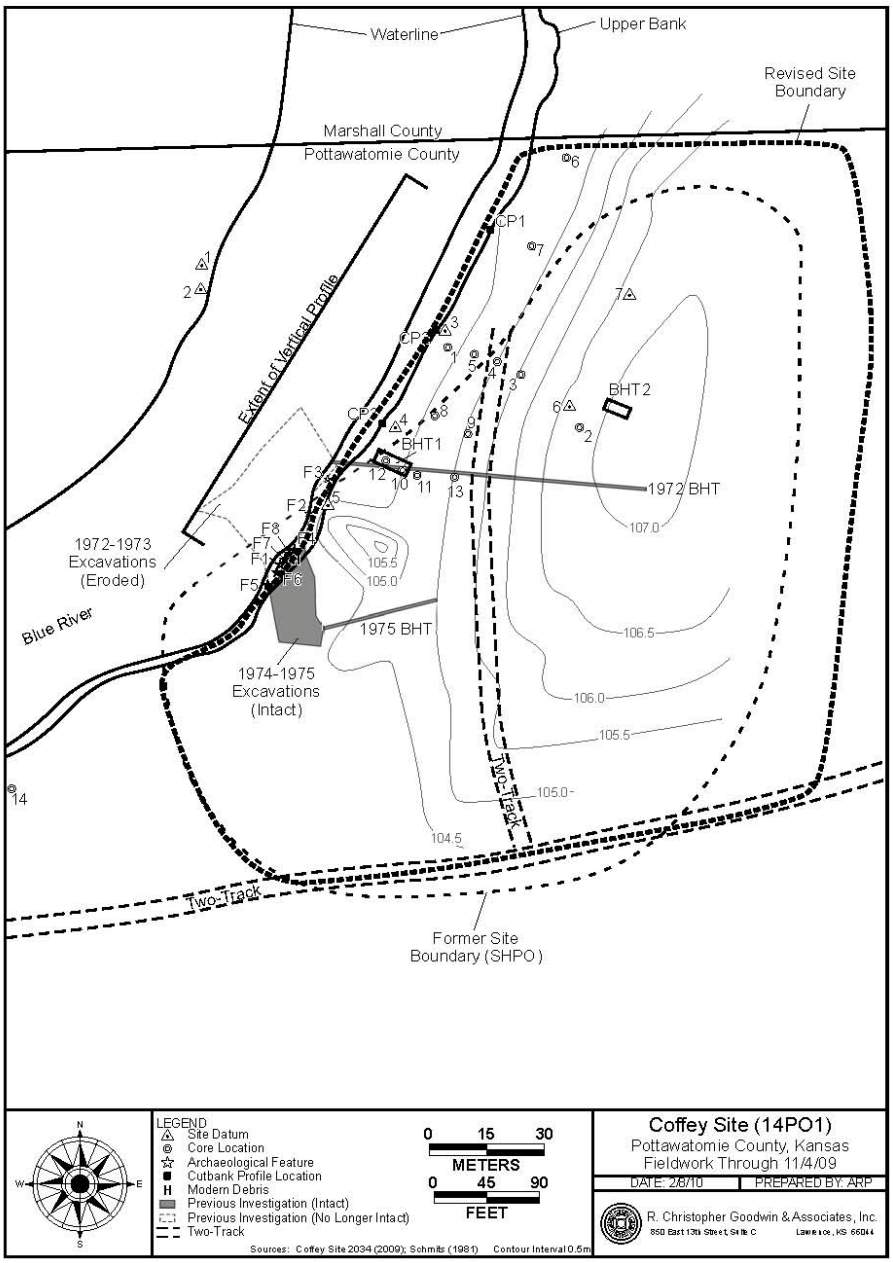

Figure 2.4 Coffey site topographic map showing the locations of archeological features, cutbank profiles, cores, and backhoe trenches associated with the 2009 investigations (adapted from Mandel et al. 2010). Also depicted are the limits of Schmit's Locality I (1974–1975) excavation block and two backhoe trenches (1972 BHT & 1975 BHT) (see Schmits 1976:Figure 3 and 1981:Figure 9).

National Register Criteria for Evaluation

The 2009 reevaluation of the National Register eligibility of the Coffey site followed procedures established by the National Historic Preservation Act [NHPA] of 1966, as amended through 2006. Section 110 of NHPA assigns Federal agencies responsibility for the protection of historic properties owned or controlled by the agency. Historic properties, including archeological sites, are defined as those that are listed in or that may be eligible for the National Register of Historic Places [NRHP]. Section 110 of NHPA specifies that National Register eligible properties be managed and maintained in a way that considers the preservation of their historic, archeological, architectural, and cultural values in compliance with section 106 of NHPA. The issue of National Register eligibility is important because historic properties deemed ineligible for inclusion in the National Register no longer require Federal agency protection or consideration under section 106 of NHPA (King 1998).

Section 106 of NHPA is administered in accordance with federal regulations [36 CFR Part 800, "Protection of Historic Properties," as amended effective August 5, 2004] formulated by the Advisory Council on Historic Preservation [ACHP], an independent agency of the United States Government established by section 201 of NHPA. Section 106 of NHPA:

> requires Federal agencies to take into account their undertakings on historic properties and afford the ACHP a reasonable opportunity to comment on such undertakings. The section 106 process seeks to accommodate historic preservation concerns with the needs of Federal undertakings through consultation among the agency official and other parties with an interest in the effects of the undertaking on historic properties, commencing at the early stages of project planning. The goal of consultation is to identify historic properties potentially affected by the undertaking, assess its effects and seek ways to avoid, minimize, or mitigate any adverse effects on historic properties [36 CFR § 800.1a].

With respect to reevaluation of the National Register status of archeological sites, the ACHP offers the following guidance: "[t]he passage of time, changing perceptions of significance, or incomplete prior evaluations may require the agency to reevaluate properties previously determined eligible or ineligible" [36 CFR § 800.4(c)(1)]. Following extensive archeological testing and mitigation fieldwork from 1970 – 1975, the Coffey site was listed in the NRHP in 1977. In 1982, a condition assessment noted that the site was in imminent danger of destruction by erosion, and recommended further testing and possible

mitigation of poorly known cultural deposits encountered in Unit IV at Locality II and Unit V at Locality I (Miller and Schmits 1982:12). The 2009 investigations conducted by RCG&A (Mandel et al. 2010) were authorized to address that finding.

The Historic Sites Act of 1935 authorized the Secretary of the Interior to identify and recognize properties of national significance (National Historic Landmarks) in United States history and archeology. Section 101 of the National Historic Preservation Act of 1966, as amended through 2006, authorized the Secretary to expand this recognition to properties of local and State significance in American history, architecture, archeology, engineering, and culture, and worthy of preservation. The National Park Service maintains the National Register, the official list of these recognized properties, on behalf of the Secretary of the Interior (National Park Service 1995:i).

The National Register Criteria for Evaluation define the scope of the NRHP; they identify the range of resources and kinds of significance that will qualify properties for listing in the National Register (National Park Service 1995). The Criteria are written broadly to recognize the wide variety of historic properties associated with our prehistory and history, and are explained in comprehensive detail in an instructional series of *National Register Bulletins* distributed via the Internet (http://www.nps.gov/history/nr/publications/bulletins.htm). As specified by the National Register Criteria for Evaluation (*Code of Federal Regulations, Title 36, Part 60*):

> The quality of significance in American history, architecture, archeology, engineering, and culture is present in districts, sites, buildings, structures, and objects that possess integrity of location, design, setting, materials, workmanship, feeling, and association, and:
>
> A. That are associated with events that have made a significant contribution to the broad patterns of our history; or
> B. That are associated with the lives of persons significant in our past; or
> C. That embody the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction; or
> D. That have yielded, or may be likely to yield, information important in prehistory or history (National Park Service 1995:2).

Historic properties significant for their ability to yield important information about prehistory or history, especially archeological sites, are most often nominated under Criterion D (National Park Service 1995:11).

Decisions concerning the significance, historic integrity, documentation, and treatment of properties can be made reliably only when the resource is evaluated within its historic context (National Park Service 1995:9). The historic context serves as the framework within which the National Register Criteria are applied to specific properties or property types. For a property to qualify for the National Register, it must meet one of the National Register Criteria for Evaluation by: (1) being associated with an important historic context *and* (2) retaining historic integrity of those features necessary to convey its significance (National Park Service 1995:3). If the property being evaluated represents an important aspect of the area's history or prehistory *and* possesses the requisite quality of integrity, then it qualifies for the National Register. In accordance with the National Register Criteria, the historic context may relate to a research topic (Criterion D) (National Park Service 1995:7).

To be listed in the National Register of Historic Places, a property must not only be shown to be significant under the National Register criteria, it also must have integrity. For properties eligible under Criterion D, integrity is based upon the property's potential to yield specific data that addresses important research questions. For example, the delicate floral and faunal remains recovered from well-stratified contexts at the Coffey site have been used to investigate variability in subsistence patterns during the poorly documented Archaic period of Central Plains prehistory (Stein 1975). The qualities of integrity can be addressed at multiple scales depending upon the significance of the research questions and historic context.

For properties nominated under Criterion D, two requirements must be met for a property to qualify: (1) *The property must have, or have had, information to contribute to our understanding of human history or prehistory*, and (2) *The information must be considered important* (National Park Service 1995:21). A property may be eligible if it has not yet yielded information but, through testing or research, is determined a likely source of data. A property is eligible if it has been used as a source *of* data

and contains additional, yet unretrieved data (National Park Service 1995:21). The Coffey site was nominated for and listed in the National Register because of the Archaic subsistence information it yielded as a result of the 1970s excavations (Stein 1975); the purpose of this reevaluation is to collect evidence needed to assist the U.S. Army Corps of Engineers in determining if the Coffey site retains archeological data of significance that merits its continued eligibility and inclusion in the NRHP.

To demonstrate continued eligibility, it is important that the significant data preserved at a site remain sufficiently intact to yield the expected important information if appropriate excavation or recovery techniques are employed. Properties that have been partly excavated or otherwise disturbed and that are being considered for their potential to yield additional important information must be shown to retain that potential in their extant portions (National Park Service 1995:23). For example, a site that has been partially excavated but still retains substantial intact deposits is eligible. Likewise, a site in which the remaining deposits are small but contain critical information on a topic that is not well known is eligible. However, a totally excavated site that once yielded important information but that no longer can convey either its historic/ prehistoric significance through modern investigation is not eligible (National Park Service 1995:24).

In the National Register nomination form prepared by Stein in 1975, the Coffey site derives its significance from its rich record of Archaic period material culture in association with floral and faunal remains needed for studies of subsistence patterns. For the purposes of the present study, if the Coffey site is found to retain intact cultural deposits that conform to the historic context specified in the 1975 nomination, it will retain its National Register status under Criterion D without need for revision.

Archeological Field Methods

Spatial Data

In 2009, the spatial positions of topographic features, cores, backhoe trenches, cultural features, stratigraphic units, artifacts and special samples were recorded using a Topcon GTS 313 Total Station and

TDS Recon data collector of sub-centimeter accuracy. A Trimble GeoXT GPS unit of sub-meter accuracy was used to collect waypoints needed to convert the Total Station data into UTM coordinates [NAD 1983, Zone 14N, meters].

Total station elevations were recorded with respect to Datum 1 (z = 100.000 m), which was established on the west bank of the Big Blue River to facilitate recordation of strata and features exposed in the east cutbank. Datum 7 is an aluminum datum cap set in concrete on the western edge of the elevated T2 landform (Figures 2.4 and 2.5). The relative positions of all seven datums utilized during the 2009 field investigations at 14PO1 are presented in Figure 4.3. The UTM coordinates of each datum are documented in the revised site form (Kansas Archeological Site Inventory, Revision 1, Shannon Ryan for RCG&A, March 1, 2010) and in the project report (Mandel et al. 2010: Table 4.2), but are excluded here to protect the site from vandalism.

Figure 2.5 Permanent concrete datum (Datum 7) at the Coffey site (adapted from Mandel et al. 2010). Datum cap reads 14PO1, 10.27.2009.

To create the 2009 topographic base map, three-dimensional coordinate data were collected using the total station. The data were imported into ESRI ArcMap software as two-dimensional data and exported as an ESRI three-dimensional shapefile; the total station shot elevations were used for Z values.

The ESRI 3D Analyst extension was used to generate a triangular irregular network (TIN) three-dimensional model, using the three-dimensional shapefile feature Z values for height source and triangulated using mass points. The ESRI 3D Analyst extension's Surface Analysis Contour tool was used to process the TIN data to create vector contour lines at a 50 cm interval.

Next, the 2009 spatial data were correlated with previous investigations by compiling and georeferencing field maps produced for the 1970–1975 project reports (Figure 2.6). In 2009, two backfilled backhoe trenches were identified and georeferenced; the relocation of these physical landmarks made it possible to align the 1970–1975 grid within the 2009 topographic base map.

Once the 1970s investigations were georeferenced, their static positions were used to measure the amount of erosion that has occurred at the Coffey site since 1950 (Figure 2.3). Evidence of the south/southeasterly migration of the Big Blue River channel is demonstrated by the U.S. Government Land Office survey maps for 1856-1857, which show the Big Blue River about one half mile to the northwest of 14PO1 (O'Brien et al 1973:Figure 1). A georeferenced sequence of aerial photographs (1950 –2008) depicts the shifting location of the river channel relative to the static 1970-1975 excavation blocks and backhoe trenches (Figure 2.3). Analysis of Figure 2.3 demonstrates that approximately 33 meters have eroded from the Coffey site since 1969, the summer before the University of Kansas initated test excavations (Schmits 1981:6)

Artifact Collection Guidelines

In order to minimize the volume of cultural materials that would require post-fieldwork processing and laboratory analyses, a restrictive artifact collection policy was enforced throughout the field investigations. Artifact collection was limited to items encountered *in situ* during the stratigraphic profiling of the east cutbank of the Big Blue River, exposed as a result of project-related backhoe trenching, or recovered during the laboratory processing of four flotation samples. The flotation samples were collected from four of six prehistoric features found eroding from oxidized Gunder Member

sediments exposed beneath the 1974–1975 KU excavation block at the south end of the east cutbank exposure (Figures 2.4, Appendix A). In addition, soil and charcoal samples were collected selectively from the cutbank profiles and backhoe trenches. Five samples were selected for radiocarbon dating in order to determine the numerical age of cultural deposits and stratigraphic units.

Radiocarbon Dating

Four charcoal samples and one soil sample were submitted to the Illinois State Geological Survey's Isotope Laboratory for radiocarbon dating. The samples underwent standard pre-treatment to remove rootlets and calcium carbonate, and were dated by accelerator mass spectrometry (AMS). Radiocarbon ages were corrected for isotopic fractionation and are presented in uncalibrated radiocarbon years before present (^{14}C yr B.P.) (Table 2.1).

Table 2.1 Radiocarbon dates obtained from Coffey site samples, fall 2009.
All dates are based on a 5568 half life.

Lab number	Sample #/ Prov.	Material Tested	δ 13 C	Date (^{14}C yr B.P.)
ISGS-A1429	RDM-14PO1-02; Feature 2009-5	Charcoal	-26.0	5135±20
ISGS-A1430	RDM-14PO1-01; Feature 2009-4	Charcoal	-25.8	5050±20
ISGS-A1467	RDM-14PO1-04; Trench 3	Charcoal	-24.1	19110±90
ISGS-A1468	RDM-14PO1-03; Trench 3	Charcoal	-24.4	19790±100
ISGS-A1469	RDM-14PO1-05; Cutbank Profile 3	Soil	-14.6	4910±15

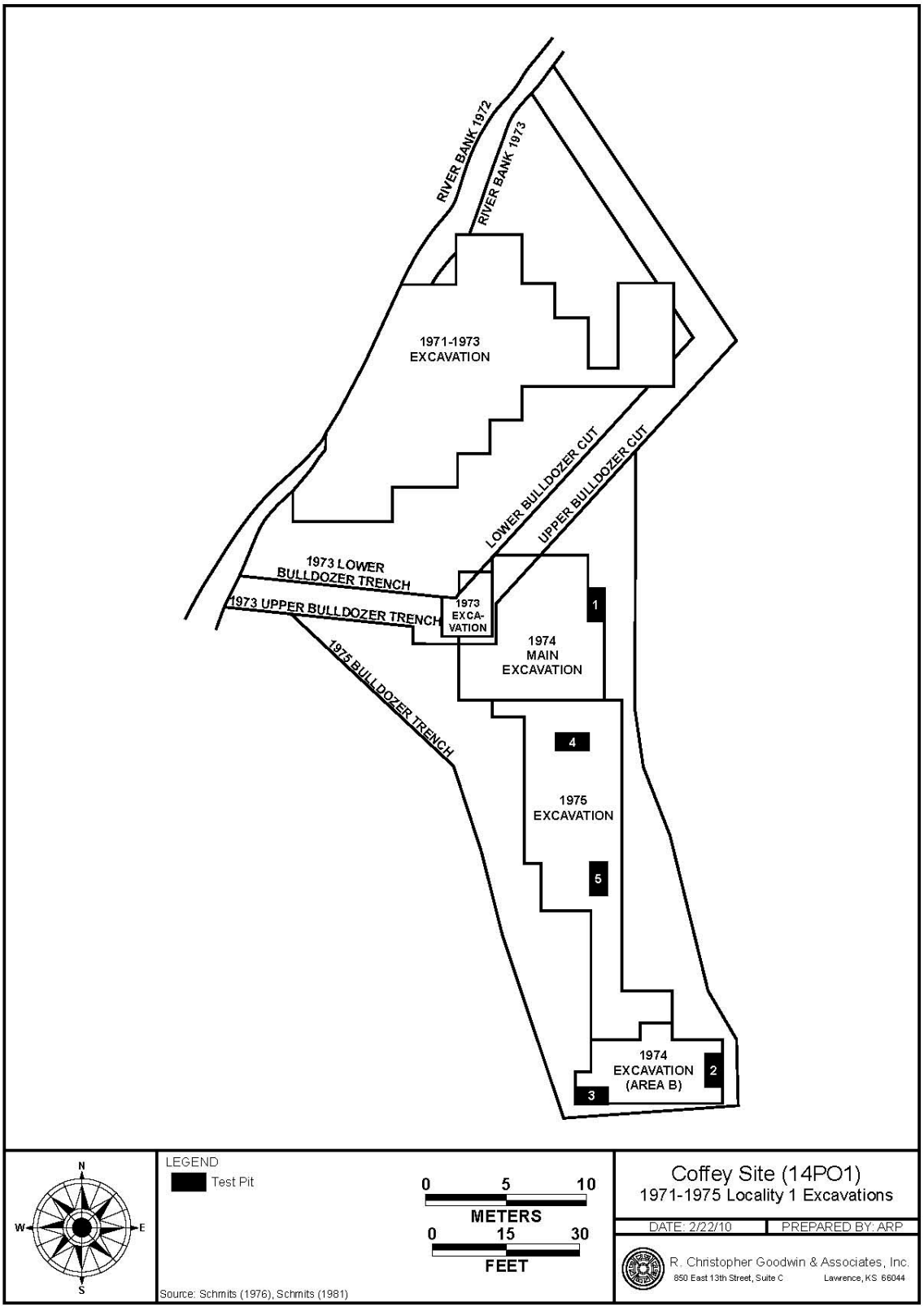

Figure 2.6 Composite plan map of the 1971-1975 excavations at Coffey site Locality I (adapted from Mandel et al. 2010; Schmits 1976:Figure 4 and 1981:Figure 15).

Archeological Laboratory Methods

Collection Processing

In the field, artifacts were collected in poly bags labeled with site number, provenience, depth below surface (if appropriate), stratigraphic context, and date and initials of the individual(s) responsible for collection of the item(s).

Chipped stone and fire-cracked rock items were cleaned in water using soft-bristle nylon brushes and air-dried. Bulk samples of soil and charcoal were air-dried. Flotation samples were processed as described below.

After the contract was awarded, KUARC was identified as the repository where the project documentation, photos and artifacts will be curated for the U.S. Army Corps of Engineers, Kansas City District. Artifacts were bagged in 4-mil polyethylene zip-lock bags, labeled, and cataloged In accordance with guidelines provided by Dr. Adair, KUARC Curator. An acid-free paper tag that details project, provenience and content information was placed in each bag.

Catalog numbers consist of the site number (14PO1), followed by the KUARC accession number (2010.1), and the sequential item specimen number (Example: 14PO1/2010.1/0001). For the sake of brevity, all in-text references to catalog numbers utilize the four-digit specimen number enclosed in parentheses, e.g. (0038). For items suitable for labeling, the catalog numbers were formatted using 4 pt. Arial font, laser-printed onto acid-free paper, and cut into small rectangular tags. The catalog labels were glued onto the surface of each artifact using clear Paraloid B-72 Lacquer. For items too small for labeling, the items were bagged individually and an acid-free catalog tag was placed in each bag.

The artifact inventory is a spreadsheet created using Microsoft Excel 2007 (Appendix B). The catalog fields are described in Table 2.2. The field options and attribute states presented in Table 2.2 have been edited to reflect the collected data stored in the artifact catalog.

Table 2.2 Coffey Site (14PO1): Artifact Catalog Fields.

Field ID [*Attribute Name*]	**Description / Attribute States**
Catalog No. [*Specimen No.*]	Site No. prefix (14PO1) / KUARC Accession Number (2010.1) / numeric sequence suffix beginning with 0001.
Field Specimen No.	Temporary Field Specimen Number [if applicable].
Area	Artifacts and samples were collected from three areas of Locality I during in this study: East Cutbank; T1; T2.
Provenience 1	Specific Provenience Units within each area of Locality I, such as: Core 12; Cutbank Profile 1, Cutbank Profile 2; Features 1, 2, 4, 5, 6, 7, and 8; Trench 2009-1, Trench 2009-2, etc.
Provenience 2	Descriptive, with reference to Provenience 1.
Provenience Notes	Supplemental provenience information.
Stratigraphic Unit	Stratigraphic units identified at 14PO1 by the 2009 investigation: Camp Creek Member, Reduced Gunder Member, Oxidized Gunder Member, Peoria Loess, Severance Formation, Gilman Canyon Formation.
Stratum / Horizon	Soil horizon designation: applicable only within a defined profile context.
SHOT#	Number auto-assigned by the Total Station Data Collector for each recorded point.
Northing	Grid Northing for Total Station Shots.
Easting	Grid Easting for Total Station Shots.
Depth	Expressed as depth below an arbitrary datum of 100.000 m for Total Station shots, or as depth in centimeters (cm) below ground surface (bgs).
Recovery Method	**FLOT** (Flotation Sample); **GRAB** (Grab Sample); **PP** (Piece-Plotted); **DSC** (Hand-Collected from a Defined Stratigraphic Context).
Count [*NUMBER*]	Specimen count [number format]. Bulk samples are counted as n = 1.
Weight [*NUMBER*]	Nearest 0.1 grams [number format]. Items and samples that weigh less than 0.1 grams were recorded as 0.05 grams.
Artifact Class [*TEXT*]	**Artifact Class Description:** Bone, Bulk Charcoal Sample, Burned Earth, Chipped Stone, Fire-Cracked Rock, Gravel, Heavy Fraction: Charcoal; Light Fraction: Charcoal; Light Fraction: Mixed Uncharred / Inorganic Residue; Radiocarbon Sample; Seeds (Charred); Shell.
CLASS CODE	**BE:** Burned Earth/Daub; **BONE:** Unworked Bone; **CH:** Charcoal; **CHST:** Chipped Stone; **CSE:** Chipped Stone Ecofact; **MIX**: Mixed Materials; **ROCK:** Unworked Stone; **SHEL:** Unworked Shell.
ART SC1 [*Artifact Sub-Class*]	Assign as specified. **Bone and Shell Sub-Classes:** INV [Invertebrate]; UNC [Unclassifiable]; **Lithic Material Sub-Classes:** CHERT: unidentified chert; LIME [limestone]; OTHER: unclassified igneous or metamorphic; PERM: Permian chert (specify sub-type in comments); SAND:
ART TYPE [*Artifact Types*]:	Assign as specified. **Bone Types:** UNID [Unclassifiable with respect to element/ species]; **Burned Earth Types:** BE [burned earth]; **Charcoal Types:** UNID [Unclassifiable], WOOD [wood charcoal]; SEED [plant seed/s]; **Chipped Stone Ecofact Types:** PDEB [pseudo-debitage]; **Chipped Stone Types:** CORE, TOOL, DEB [debitage], MDEB [microdebitage <5mm²]; **Rock Types:** FCR [fire cracked rock], GRAV [gravel]; **Shell Types**: UNID [unclassifiable].
TA1 [*Thermal Alteration 1*]	**BOTH:** fire and freeze-thaw; **FIRE:** altered by heat; **FT:** freeze-thaw damage; **IND:** inconclusive evidence of thermal alteration; **NONE:** no evidence of thermal alteration.
TA2 [*Thermal Alteration 2*]	**Combine as needed to describe the specimen. AS:** ash sheen; **B:** blackened; **C:** crenated fracture; **CAL**: calcined; **FT:** freeze-thaw; **IND:** indeterminate; **L:** Lustrous; **NA:** not applicable; **OX:** oxidized; **P:** potlids; **R:** reddened; **Z:** crazing.
RB [*Recent Breakage*]	**YES:** evidence of recent breakage is present [describe in comments]; **NO:** evidence of recent breakage is absent; **IND**: evidence of recent breakage is indeterminate.
COMMENTS	Supplemental text-based descriptive comments.
Photograph?	**YES:** Prepare an artifact figure for the report. **NO:** Do not prepare an artifact figure for the report.
DATE	Specimen collection date.
COLL	Initials of collector(s).

The inventory of artifacts and special samples collected as a result of these investigations are summarized in Table 2.3 by recovery method, class, count, and weight. By count, the bulk of the collected material is from the flotation samples, but the volume is derived from hand-collected samples, skewed in particular by bulk charcoal samples and chipped stone debitage recovered from the backdirt of two backhoe trenches.

Table 2.3. Summary of artifacts recovered during the Geoarcheological Field Investigations in fall 2009.

Recovery Method:	**Flotation**		**Hand-Collected**		**Total Sum of Count**	**Total Sum of WT(g)**
Artifact Class / Type:	***Count***	***WT(g)***	***Count***	***WT(g)***		
Burned Earth	**162**	**5.6**	--	--	***162***	***5.6***
Bone (≤10mm²)	**699**	**3.9**	--	--	***699***	***3.9***
Charcoal Samples	**9**	**1.2**	**13**	**1949.6**	***22***	***1950.8***
SEED (chenopod)	1	0.1	--	--	*1*	*0.1*
WOOD	3	0.3	--	--	*3*	*0.3*
WOOD/UNID	5	0.8	--	--	*5*	*0.8*
BULK	--	--	13	1949.6	*13*	*1949.6*
Chipped Stone	**128**	**15.5**	**225**	**868.45**	***353***	***883.95***
CORE	--	--	2	223.7	*2*	*223.7*
DEB	30	9	200	411.65	*230*	*420.65*
MDEB (≤5mm²)	97	0.7	--	--	*97*	*0.7*
TOOL	1	5.8	23	233.1	*24*	*238.9*
Pseudo-debitage	**1**	**0.1**	**11**	**4.3**	***12***	***4.4***
Mixed Light Fraction Residue	**4**	**8.5**	--	--	***4***	***8.5***
Rock / Unworked Stone	--	--	**17**	**676.5**	***17***	***676.5***
FCR	--	--	13	495	*13*	*495*
Gravel	--	--	4	181.5	*4*	*181.5*
Shell (≤10mm²)	**8**	**0.1**	--	--	***8***	***0.1***
Grand Totals	***1011***	***34.9***	***266***	***3498.9***	***1277***	***3533.75***

Chipped Stone Artifact Analysis

Table 2.4 outlines the supplemental attribute data collected for each chipped stone artifact > 5 mm²; it also has been edited to reflect attributes actually observed in the analyzed sample. The chipped stone artifact attribute data also are presented in Appendix B. Except for a projectile point reduction sequence model developed by Patricia Miller (1980), samples of chipped stone artifacts recovered from

the Coffey site have been discussed in bulk descriptive or typological terms, but never before in terms of their contextual relationships to other artifacts or feature contents. This study attempts to chart new territory for the analysis of curated chipped stone artifacts from the Coffey site. Special analytical methods utilized in this study included documentation of post-depositional surface alterations caused by exposure to metal implements, thermal alterations, limited nodule analysis and refitting, and lithic material source identifications.

The chipped stone analysis yielded no evidence of variability in lithic material source utilization, and this topic is not discussed further in Chapter 3. In a sample of all chipped stone >5mm² (n = 256), only locally available Permian cherts were identified. The sample consists of 85 percent Florence chert (n = 222), a small quantity (5 percent) of Wreford chert (n=14), and 10 percent Permian chert, type unspecified (n = 24). This finding is remarkably consistent across all stratigraphic contexts: the uniformity of the lithic material source utilization also was noted in artifacts observed, but not collected, from the T-2 surface and along the eroded cutbank. The apparent homogeneity of lithic material utilization at Coffey makes it nearly impossible to investigate variability in patterns of source utilization through time, at least not using readily accessible (macroscopic) methods of lithic material identification. However, variability in use of procurement loci, e.g. quarried bedrock, residuum, or stream gravel bar, is an accessible research target for research on curated chipped stone artifacts. The systematic presence/absence recordation of attributes such as alluvial transport rind, weathering surfaces characteristic of surface exposures and residual deposits, and fresh, chalky limestone (bedrock) cortex may make it possible for future studies to identify and track variability in toolstone acquisition between the various archeological contexts documented at the Coffey site.

Table 2.4 Coffey Site (14PO1): Chipped Stone Supplemental Attribute Fields.

Field ID [*Attribute Name*]	**Description / Attribute States**		
Size Grade [*per item*]	**<2 cm; 2-4 cm; 4-6 cm; 6-8 cm; 8-10 cm; >10 cm**		
LMQ [*Lithic Material Quality*]	**HQ:** high quality (cryptocrystalline, free from inclusions, cleavage planes, and weathering damage); **MQ:** moderate quality (minimal flaws that do not inhibit knappability); **LQ:** low quality (substantial flaws in the forms of inclusions, cleavage planes, desilicification or substantial frost damage); **NA:** not applicable; **IND** = Indeterminate due to thermal damage or other post-depositional damage.		
CT [*Cortex Type*]	**BC:** chalky, unweathered bedrock cortex; **TR:** cobble transport rind; **WS:** weathering surface (residuum); **NO:** none observed.		
FORM [*Blank Source*]	**COB:** gravel cobble; **TAB:** tabular slab; **NOD:** rounded or irregular nodule; **IND:** indeterminate.		
DBT [*Blank Type*]	**ANGD:** blocky debris; **BIFC**: biface; **CORE:** core; **FLK:** flake; **FLKC:** minimally tested cobble.		
DST [*Blank Sub-Type*]	**Debitage [Blank] Subtype (DST)**	**CODE**	**Explanation / Instructions**
	Blocky Debris	ANGD	Code core fragments as cores
	Biface	BIFC	Use only if the blank type is indeterminate.
	Minimally tested / modified cobble (non-core)	FLKC	Minor flake removals < 2 cm.
	Amorphous Core	AMCO	
	Potlid (or other thermal spall)	POT	--
	Amorphous Core Reduction Flake	CORF	--
	Biface Thinning Flake	BTF	--
	Blade	BLAD	Lamellar, microblade, or prismatic: see comments.
	Tool Maintenance Flake (Unifacial)	TMF	Tool maintenance debris.
	Notching Flake	NOTF	Specialized tool production debris.
	Pressure Flake	PFLK	Specialized late stage tool finishing debris.
	Unclassifiable Flake (Complete)	FLK	--
	Unclassifiable Flake (Fragment)	FRG	--
RTB *[Reduction Trajectory: Blank]*	**BIFC**: biface reduction; **BIP**: bipolar reduction; **CORE**: amorphous core; **IND**: indeterminate; **BLAD**: blade or blade-like flake reduction; **TOOL**: specialized tool manufacture/maintenance debris.		
RS [*Reduction Stage*]			
Flakes	**E:** early; **M**: middle; **L**: late; **IND**: indeterminate.		
Cores	**E:** early; **M**: middle; **L**: late; **EX**: exhausted; **IND**: indeterminate.		
Tools	**IFT:** informal flake tool; **FT:** formal tool; **RT:** recycled/repurposed tool; **TM:** tool maintenance / specialized production debris; **IND:** indeterminate.		
POR [*Portion***] NOTE: Code angular debris as NA.**			
Flakes and Informal Flake Tools	**PRBC:** platform-remnant bearing flake, complete; **PRBB:** platform-remnant bearing flake, broken; **FRG:** non-PRB flake fragment; **NA**: not applicable.		
Formal Tools	**COM:** complete / nearly complete; **PRX:** proximal, proximal/lateral, proximal/medial; **MED:** medial, lateral; **DIS:** distal, distal/lateral, medial/distal.		
Other (Bifaces, Cores)	**COM:** complete; **INC**: incomplete; **NA**: not applicable.		
TT *[Tool Type]*	**BIFC:** biface; **COMB:** combination tool (any combination); **KNIF:** bifacial and hafted knives; **NA:** Not applicable; **UMFT:** unimarginally retouched flake tool (retouch extends > 2 mm but no more than 5 mm from the tool edge); **UTFL:** utilized flake tool (retouch extends ≤ 2 mm from the modified edge).		
TST *[Tool Sub-Type]*	**Tool Subtype (TST)**	**TST Code**	**TT Usage**
	Combination Tool [describe in comments]	varies	COMB
	Graver	GRAV	ALL
	Indeterminate	IND	ALL
	Not Applicable	NA	varies
	Acute retouch (less than 45° angle)	KNIF	Flake Tools
	Steep retouch (more than 45° angle)	SCRP	Flake Tools
	Biface Fragment, Indeterminate Stage	BFRG	BIFC
	Stage 1 biface: initial edging	S1BF	BIFC
	Stage 2 biface: primary thinning, 2-3:1 w:t ratio; edge angles of 40-60 degrees	S2BF	BIFC
	Stage 3 biface: secondary thinning, 3-4:1 w:t ratio, edge angles of 25-45 degrees	S3BF	BIFC
	Bifacial Knife (unbeveled)	BIK	KNIF

Flotation Sample Processing and Analysis

On October 5th and October 7th, 2009, a total of four flotation samples (10-12 liters each) were collected, one each from four prehistoric cultural features exposed beneath the 1974–75 KU excavation block exposed by cutbank erosion. The flotation samples were processed by Mr. Kessler (RCG&A) using a Flot-Tech flotation device made available to RCG&A by Dr. Adair (KUARC).

After processing, the light and heavy fraction samples were washed, air-dried, sorted by material class and cataloged. Mr. Kessler sorted the light fraction samples into three categories; (1) charred wood and unidentifiable plant material, (2) charred identifiable seeds or other plant material, and (3) uncharred plant and non-plant material. The heavy fraction was sorted into six categories: (1) chipped stone [debitage (≥5mm²) and microdebitage (<5mm²)], (2) unclassifiable bone fragments, (3) unclassifiable shell fragments, (4) burned earth, and (5) charred plant remains [wood, seeds, and unidentified fragments]. These classes were inventoried following procedures described previously. Sorting and specimen identifications were completed with the aid of a low power (20x-40x) stereomicroscope. Dr. Adair assisted Mr. Kessler with the identification of charred plant materials.

In contrast to the amount of charcoal observed during the fieldwork, the amount recovered is negligible (Table 2.3). Dr. Adair has suggested that the charcoal preserved at the Coffey site is extremely fragile because of its exposure to constantly fluctuating water and temperature regimes. In the future, pre-treatment of the samples with a deflocculant containing trisodium phosphate is recommended to optimize charcoal recovery.

CHAPTER 3: ARCHEOLOGICAL RESULTS

Introduction

Chapter 3 documents the selective recovery and analyses of cultural materials encountered during the geoarcheological fieldwork described in Mandel et al. (2010:Chapter 5). The results of the artifact analyses are presented by collection context within each stratigraphic unit. Figure 2.4 maps the locations of archeological features, cutbank profiles, cores, and backhoe trenches associated with the 2009 investigations. Appendix A diagrams the spatial pattern of the stratigraphic units, locations of profiles and cultural materials for the east cutbank exposure. Finally, Chapter 3 also presents archeological evidence in support of the Coffey site's continued eligibility for inclusion in the National Register under Criterion D.

Erosion destroyed Locality II sometime prior to 1991 (Figure 2.3), and has severely impacted Locality I. In 2009, stratified Late and Middle Archaic cultural deposits were identified at Locality I within late-Holocene reduced Gunder Member and middle-Holocene oxidized Gunder Member alluvial channel fills inset into late Pleistocene alluvium (Severance Formation). In addition, a cluster of artifacts encountered at depths of 60-70 cm within the Severance Formation in Profile 1 of BHT1 raises the intriguing possibility of pre-Clovis occupation at the Coffey site.

This investigation of the Coffey site equates the middle-Holocene oxidized Gunder Member with the Unit III deposits identified by Schmits (1976, 1978, 1980, 1981). The Coffey site was listed in the National Register in 1977 based on the Archaic period archeological evidence recovered from, and still preserved within Unit III (Stein 1975). Although the middle Holocene cultural deposits preserved at the Coffey site have been greatly diminished by erosion over the past thirty years, the extant Archaic cultural deposits still possess those qualities of significance and integrity that merited their inclusion in the National Register in 1977.

In contrast, very little is known about the archeological content or integrity of the reduced Gunder Member, which appears to correlate with Schmits' Units IV **and** V, or the isolated artifact concentration

discovered within the late Pleistocene Severance Formation. The archeological evidence collected during the geoarcheological investigations of those contexts is discussed below.

Archeological Collection Contexts: East Cutbank Exposure

Camp Creek Member [CCM]

Archeological evidence collected from the upper and lower boundaries of the dense sandy loam deposit that forms the base of the Camp Creek Member has helped establish its identity as the historic plow zone depicted in archival excavation photos (Figure 3.1). Traces of rust and fracture patterns consistent with farm implement contact are present on a chipped stone flake tool (0038) identified during cutbank examination of the contact between Horizons C2 and C3 of the Camp Creek Member (Figure 3.2, Appendix A). Identical patterns of post-depositional damage are present on the majority of artifacts recovered from the base of the C3 horizon of the Camp Creek member of Cultural Zone 1 in Cutbank Profile 1 (Figure 3.3). Evidence of recent breakage and a silvery metallic residue caused by shovel or trowel contact is common on artifacts recovered from CP1, but traces of rust are absent on artifacts recovered from CZ 2 through CZ6. Although rust can be transferred onto artifacts if rusty shovels and trowels are used during fieldwork, the use of well-maintained field equipment eliminates this potential source of contamination. When coupled with weathered fracture surfaces and extensive fragmentation in the absence of conjoining artifacts, the presence of rust on artifacts is a reliable indicator of farm implement contact, more commonly referenced as plow damage. The absence of rust on artifacts recovered from lower cultural zones confirms the interpretation of Stratum C3 of the Camp Creek Member as the 1970s plow zone depicted in Figure 3.1.

In excavation profiles from the 1970s, a "cultivation zone" is depicted at the top of Schmits' Unit V, which he characterized as a "floodbasin deposit" (Schmits 1976, 1980:Figure 46). Dr. Mandel suspects that Unit V correlates with a cumulic soil formed in the upper portion of the reduced Gunder member. Prior to cultivation, this soil was the T-1 surface. Based on the single radiocarbon date obtained from

CP3, the "Unit V" surface would have been available for occupation by ca. 4900 B.P. (Table 2.1). The archeological content of this former surface is insignificant compared to the cultural deposits preserved in stratified context within the reduced and oxidized Gunder Members.

Figure 3.1 Locality I excavations and bulldozer cut in 1972 (adapted from Mandel et al. 2010). View is to the north with the Big Blue River on the left (west) and the cultivated field on the right (east). Source: Archival 35 mm slide scanned courtesy of KUARC.

Cutbank Profile 1 [CP1]

The six cultural zones (CZ1–CZ6) identified in CP1 are summarized in Table 3.1 and illustrated in Figures 3.3, 3.4, and 3.5. Cultural Zone 1 yielded five chipped stone artifacts in the transition zone at the contact between the C3 horizon of the Camp Creek Member and the Ab1 horizon of the reduced Gunder Member (Figures 3.3 and 3.4). As noted previously, evidence of plow-damage was observed on artifacts collected from CZ1: all specimens >2 cm (n = 4) exhibit evidence of rust and fracture patterns characteristic of farm implement contact. The debitage items include a middle-late stage biface thinning flake (0003) and an unclassifiable flake fragment (0004), both of Florence chert. The tools include a Stage 3 biface fragment (0002) made from a cf. Wreford chert cobble procured from an alluvial context (Figure 3.6), a fragment of a Wreford chert scraper on an early-middle stage core reduction flake blank (0001),

and a utilized bladelet tool of Florence chert (0005). The bladelet tool is a snapped distal portion with steep retouch at both ends and acute retouch along one lateral margin.

A bladelet reduction trajectory has been defined at Early Ceramic (Middle Woodland) Hopewell village sites along the Kansas and Missouri Rivers (Reid 1976). On the Central Plains, small bladelet technology is associated with the Early Ceramic period, although examples of percussion-blade technology are distributed in time from the Clovis through Protohistoric periods in the Plains region as a whole (Wilke et al. 2002:4). In this particular context, an Early Ceramic cultural affiliation assignment is consistent with the extant stratigraphic evidence and previous reports of Woodland cultural deposits from Unit V (Schmits 1980:88-89).

CZ2 yielded three chipped stone artifacts, none of which exhibit evidence of plow damage. The debitage item is a fire-fractured, medial fragment of a late-stage biface thinning flake of Florence chert (0008). Both tools (0006 and 0007) are utilized flake fragments of Florence chert. Specimen 0006 exhibits traces of metallic residue and fresh fracture edges characteristic of shovel damage incurred during the cleaning of CP1.

CZ3 produced the densest concentration of artifacts: five debitage, one tool (0011), and three items of pseudo-debitage (0015, 0016, 0017), which are spalls generated when stone artifacts were struck by shovels and/or trowels during profile cleaning. All seven chert artifacts are of Florence chert. The tool (0011) is a utilized flake with two working tool edges and a backed (deliberately dulled) "handle" edge. The debitage includes three early stage core reduction flakes (0009, 0010, 0014), one flake fragment (0012), and one-fire-fractured spall of angular debris (0013).

Artifact density dropped in the levels below CZ3. Three artifacts were identified in CZ4: a 4-6 cm chert cobble (0019), a shovel-damaged flake fragment (0020), and a large fragment of a Stage 4 biface/bifacial knife (0018) of cf. Wreford chert (Figure 6.2). CZ5 yielded a single utilized biface thinning flake (0021) of Wreford chert. Finally, CZ6 contained a large (8-10 cm) cobble damaged by shovel contact.

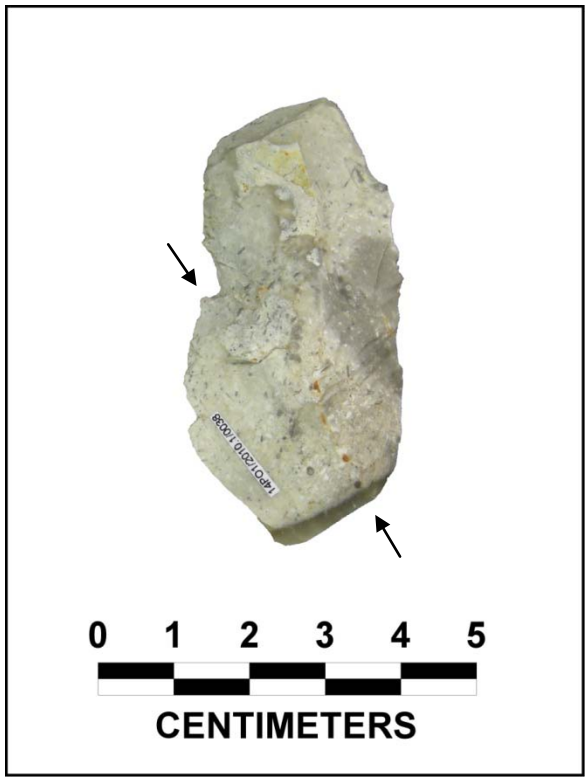

Figure 3.2 Specimen 0038 is a chipped stone flake tool of high quality Florence chert recovered from the East Cutbank at the contact between Strata C2 and C3 of the Camp Creek Member (adapted from Mandel et al. 2010). Although fragmentary, the tool retains three retouched edges: two steep scraper edges and one acute knife edge. Note the association between the orientation of the oxidized rust streak and the edge fracture as indicated by arrows; these features are evidence of implement blade contact (plow damage) that support the identification of Stratum C3 of the Camp Creek Member as the former (1970s) plow zone.

It is possible that the stratigraphic context of the Unit IV archeological record investigated at Locality II from 1973–1975 (Schmits 1981) is comparable to the stratified deposits encountered in CP1, although the total destruction of Locality II by erosion precludes further investigation of that hypothesis (Figure 2.3). Nonetheless, the cultural zones identified in CP1 are evidence that stratified cultural deposits are preserved within the reduced Gunder Member sediments in a previously unstudied area of the site, roughly 85 meters northeast of the extant Locality I excavation block (Figure 2.4). Reduced Gunder Member sediments with associated archeological content also were encountered to the south along the east cutbank exposure (Appendix A) and in BHT1.

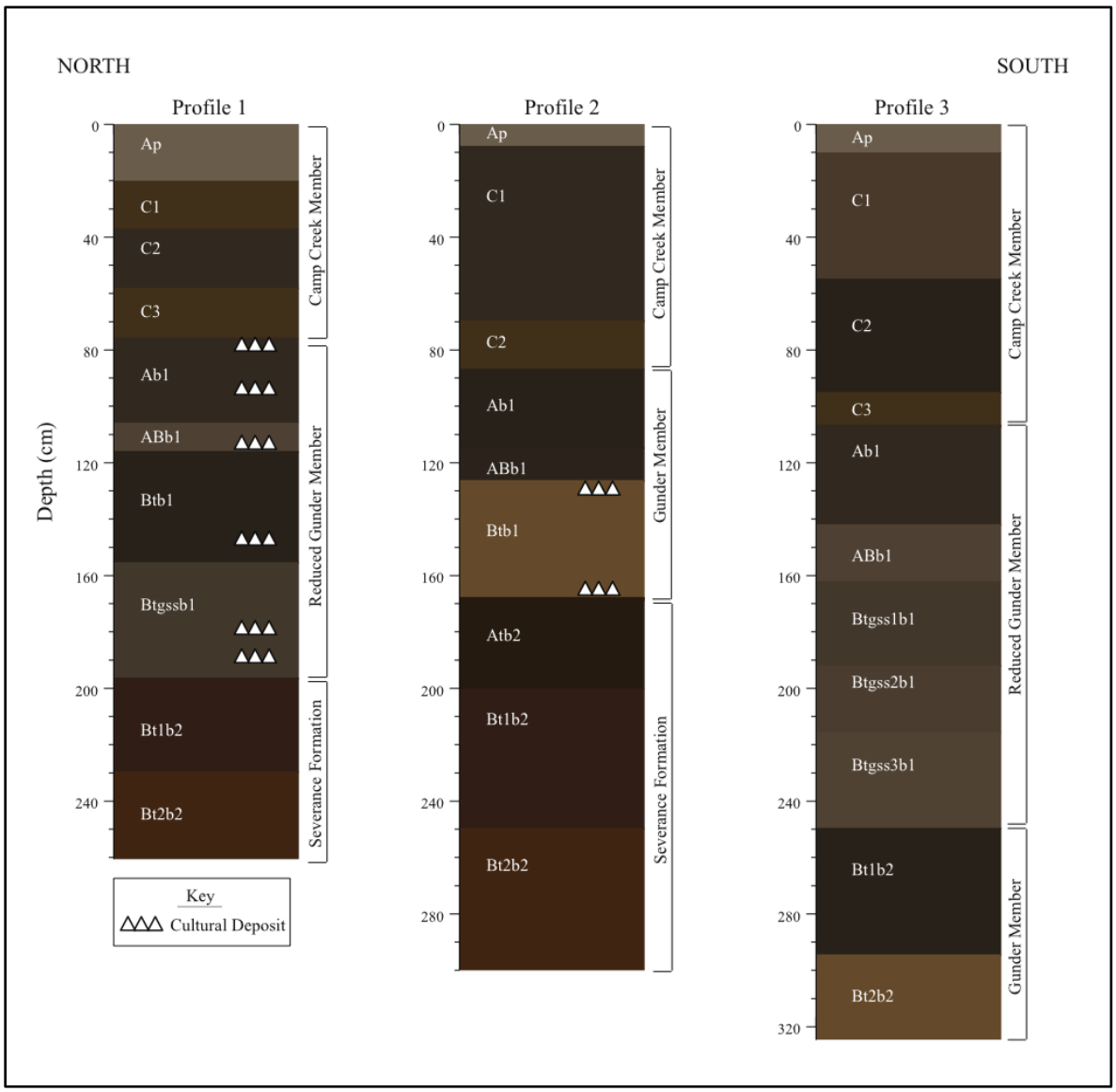

Figure 3.3 Diagram illustrating the soil-stratigraphy of the cutbank profiles at site 14PO1 (adapted from Mandel et al. 2010).

Table 3.1 CP1: Artifact Distribution by Cultural Zone.

Cultural Zone	Unit	Stratum	Depth (cmbgs)	Chipped Stone		Ecofacts		Totals by Cultural Zone
				Debitage	*Tools*	*PDEB*	*Rock*	
1	CCM/RGM Contact	Base of C3 / Top of Ab1	76-80	2	3	--	--	*5*
2	RGM	Ab1	94-98	1	2	--	--	*3*
3	RGM	ABb1	113-115	5	1	3	--	*9*
4	RGM	Btb1	148-150	1	1	--	1	*3*
5	RGM	Btgssb1	180	--	1	--	--	*1*
6	RGM	Btgssb1	190	--	--	--	1	*1*
Sub- Class Totals:				***9***	***8***	***3***	***2***	
Class Totals:				***17***		***5***		

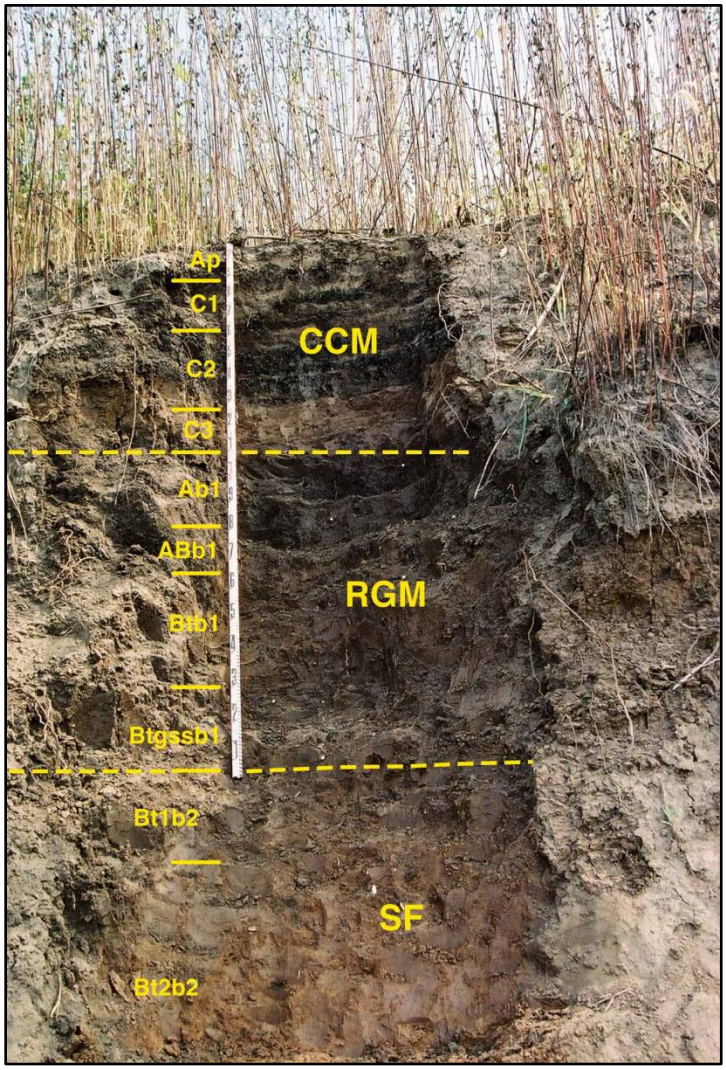

Figure 3.4 Stratigraphic units and soil horizons observed at CP1 (adapted from Mandel et al. 2010). The white photo scale is 2 m long. View is to the east.

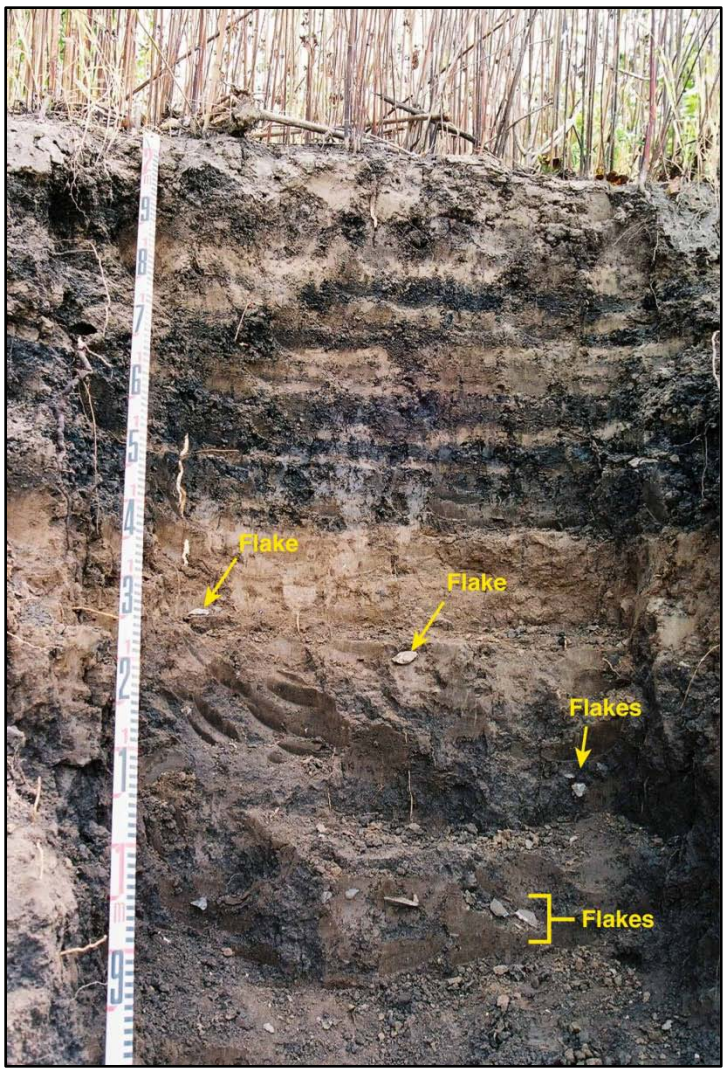

Figure 3.5 Close-up photograph of CP1 showing cultural deposits at the base of the former (1970s) plow zone and in the buried soil (Ab1) (Schmits' Unit V?) at the top of the reduced Gunder Member (adapted from Mandel et al. 2010). View is looking east.

Cutbank Profile 2 [CP2]

Two cultural zones were identified in the oxidized Gunder Member sediments of CP2 (Appendix A, Figure 3.3). CZ1 consists of a single fire-fractured flake fragment (0023) of Permian chert recovered at the contact between the ABb1 and Btb1 horizons of the oxidized Gunder Member (Figure 3.3). Weathered fractures and traces of rust are characteristic of plow damage, while fresh breaks indicate shovel damage: both types of damage are present on this specimen.

CZ2 is at the contact between the oxidized Gunder Member and the Severance Formation (Figure 3.3). CZ2 yielded three chipped stone artifacts: a late-stage biface thinning flake of Wreford chert (0025), a utilized flake fragment (0024), and a plow and shovel-damaged flake fragment (0026), both of Florence chert. The presence of plow-damaged flakes in both cultural zones in CP2 attests to the potential for downward movement of artifacts within the clay-rich sediments of the oxidized Gunder Member.

Figure 3.6 Biface fragments collected from CP1 (adapted from Mandel et al. 2010). The top specimen (0002) is a Stage 3 biface fragment of cf. Wreford chert collected from CZ1, which represents materials recovered from the base of the 1970s plow zone. The bottom specimen (0018), from CZ4, is a Stage 4 biface / bifacial knife fragment of Wreford chert.

Nine chipped stone artifacts, two tools and seven debitage were recovered from a stratigraphic context comparable to CZ2 in CP2: the contact between the base of the oxidized Gunder Member and the top of the Severance Formation (Appendix A). These artifacts were encountered during delineation of the northern edge of a paleochannel filled with reduced and oxidized Gunder Member sediments (Figure 3.7, Appendix A). They were identified in three discrete findspots within a five meter zone located between N975 and N980, about eight meters south of CP2 (Appendix A). Although excavation-related shovel damage was noted on three of the items, none of the artifacts exhibit evidence of plow damage. The tools are both utilized core reduction flakes (0028 and 0032). Specimen 0032 appears to have been utilized as a graver. In addition to four unclassifiable flake fragments (0029, 0030, 0033, and 0036), the debitage sub-class includes two early stage (0031 and 0034) and one middle stage (0035) core reduction flakes. All of the artifacts from this sample are Florence chert; six items exhibit evidence of exposure to fire. The stratigraphic context and spatial proximity of the three findspots suggests the artifacts were deposited contemporaneously on a single occupation surface. To evaluate this hypothesis, the sample was sorted into analytical nodules based on similarities in cortex, coloration and banding patterns. The sorting resulted in the identification of six nodules. Nodule 1 is a heat-treated residual nodule distinguished by a distinctive reddened weathering surface: it includes three specimens (0030, 0032, and 0034) distributed across all three findspots. Nodule 2 is a heat-treated gravel cobble with two specimens (0031 and 0035) from different findspots. The remaining four nodules (3-6) are single item nodules. Nodule 3 was procured from a bedrock source; Nodule 5 was from a residual source. Nodules 4 and 6 are represented by single items that lack cortical surfaces. The results of this limited nodule analysis support the linkage of the three discrete findspots into a single occupation surface. With only minimal data, this simple exercise demonstrates that controlled excavation of this occupation surface has the potential to contribute data relevant to the investigation of spatial relationships between the objects and features contained within it.

Figure 3.7 Sequence of stratigraphic units exposed beneath the T-1 surface in the paleochannel fill that dominates the southern half of the cutbank at 14PO1 (CCM = Camp Creek Member, RGM = reduced Gunder Member, GM = oxidized Gunder Member, and SF = Severance Formation) (adapted from Mandel et al. 2010). View is to the southeast.

Oxidized Gunder Member

At the southern end of the east cutbank exposure, eight cultural features were identified in a paleochannel filled with the oxidized Gunder Member (Figure 3.7): Features 2009-1 to 2009-8 subsequently are referenced in text as F1– F8 (Figure 2.4, Appendix A). F1, F2, and F3 were identified on September 8, 2009 during examination of the cutbank exposure. The features were flagged with flagging tape pinned to the cutbank with 6-inch nails, and GPS waypoints were collected to aid in the relocation of these features for further recordation. Unfortunately, Features 2 and 3 either eroded away or were buried by cutbank slump before the team returned to the Coffey site to document them in early October.

On October 5 and 7, 2009, radiocarbon samples, artifacts and flotation samples from six cultural features (F1, F4-8) were salvaged from intact cultural deposits preserved beneath the remnant of the 1974-1975 KU excavation block (Figures 3.8 and 3.9). These six features occur in the oxidized Gunder Member at depths in excess of three meters below the present-day land surface.

Figure 3.8 A southeasterly view of the excavation block at Locality I as exposed in the cutbank of the Big Blue River in the fall of 2009 (adapted from Mandel et al. 2010).

Feature 2009-1 [F1]

F1 was first encountered during cutbank inspection on September 8, 2009; a single chipped stone flake observed during the initial site visit was not relocated when the feature was delineated and recorded on October 7, 2009. F1 consisted of a long, thin charcoal band with a horizontal axis of 555 cm, and a vertical axis of ~2 cm (Figure 3.10). F1 appears to represent an ephemeral occupation surface comparable to F 6 (Figure 3.9). Four charcoal samples were hand-collected from the ends and center of F1 (Catalog Numbers: 14PO1/2010.1/0103, 14PO1/2010.1/0104, 14PO1/2010.1/0106, and 14PO1/2010.1/0108).

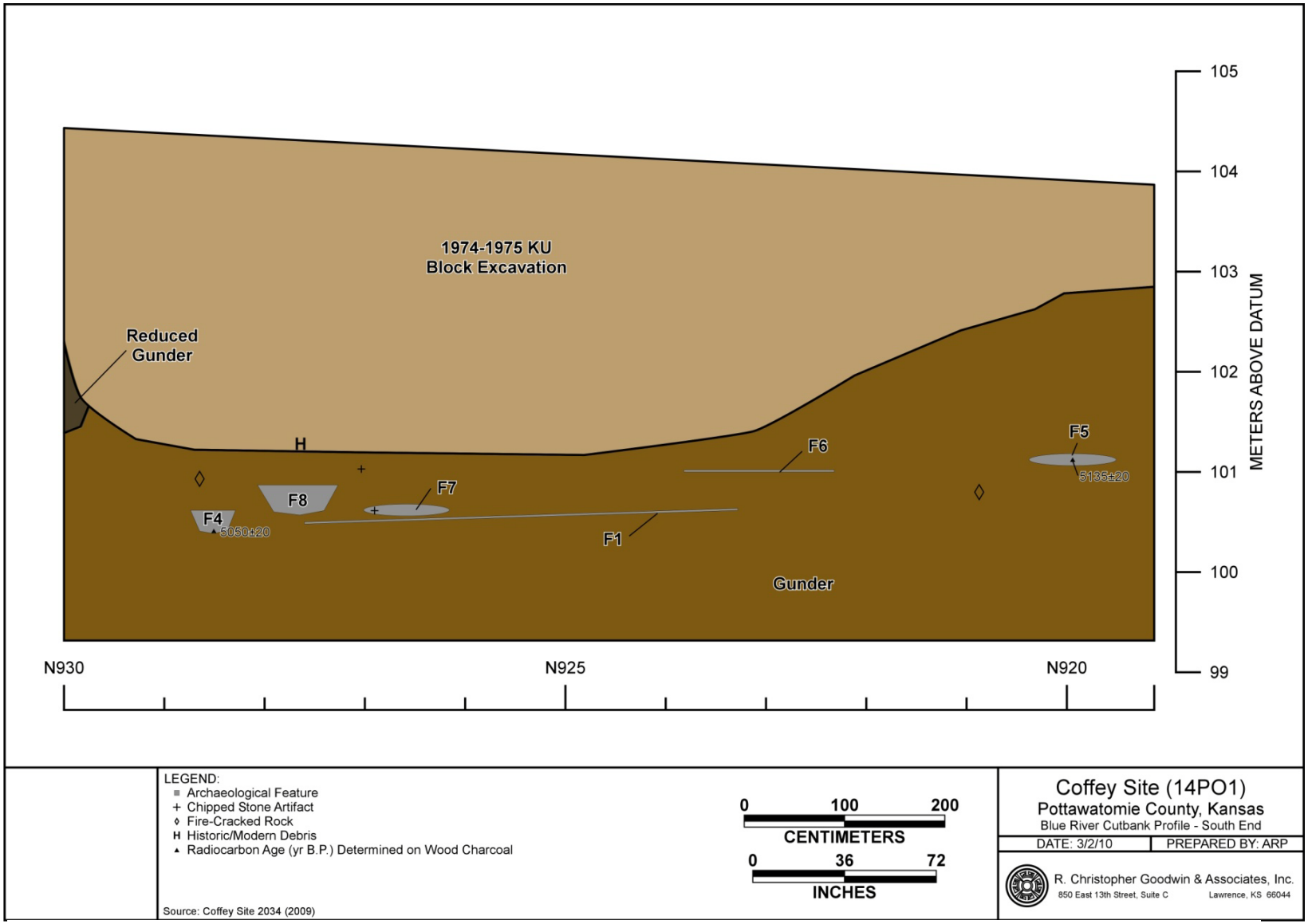

Figure 3.9 Diagram showing the relative positions of features identified in oxidized Gunder Member sediments preserved beneath the bisected 1974–75 KU Excavation Block (adapted from Mandel et al. 2010).

Figure 3.10 Profile View of F1 (adapted from Mandel et al. 2010).

Feature 2009-2 [F2]

F2 was first encountered during cutbank inspection on September 8, 2009: chipped stone, unmodified bone, fire-cracked rock, and charcoal were observed *in situ* in the oxidized Gunder Member at the location illustrated in Appendix A. A GPS waypoint and a charcoal sample (14PO1/2010.1/0109) were collected, and the feature was marked with flagging tape. F2 was not relocated during a follow-up visit on September 30, 2009, and was presumed lost to erosion.

Feature 2009-3 [F3]

Feature 3 was first encountered during cutbank inspection on September 8, 2009: chipped stone, unmodified bone, fire-cracked rock, and charcoal were observed *in situ* in the oxidized Gunder Member at the location illustrated in Appendix A, but no artifacts or samples were collected. The feature was marked with flagging tape and a GPS waypoint was collected. Feature 3 could not be relocated during a follow-up visit on September 30, 2009, and was presumed lost to erosion.

Feature 2009-4 [F4]

F4, a basin-shaped hearth feature, was discovered on October 5, 2010 during cutbank profiling fieldwork (Figure 3.11). The edges of the basin were intensely reddened, indicating the feature and its contents were burned in primary context; burned earth, charcoal, and one chipped stone flake were observed *in situ*. F4 measured approximately 42 cm along its horizontal axis, and 22 cm along its vertical axis. It is located at the northern end of the feature cluster (Figure 3.9).

A single 10-12L flotation sample (FS#1) was extracted from the feature fill, which extends back into the cutbank. A charcoal sample [Radiocarbon Sample RDM-14PO1-01] was hand-collected from the base of the feature fill. Radiocarbon Sample RDM-14PO1-01 yielded an AMS ^{14}C age estimate of 5050 ± 20 rcybp [A1430; wood charcoal; $\delta^{13}C$ = -25.8].

The flotation sample from F4 yielded a total of 372 items, all of which exhibited evidence of intense heat exposure (Table 3.2). The burned earth specimens were examined for traces of plant impressions, but none were observed. The bone fragments were burned and/or calcined, and were too fragmentary to merit further analysis. The 69 chipped stone microdebitage specimens recovered from F4 also were excluded from further examination due to their small size (≤5 mm^2). The charcoal recovered from the light and heavy fractions of FS#1 consisted of deciduous wood charcoal and fragments of unidentifiable plant taxa.

Table 3.2 Cultural materials recovered from F4 (FS#1, Sample Volume: 10-12L).

Recovery Type	Artifact Class	Count	Weight (grams)
Heavy Fraction	Burned Earth	79	2.5
	Unclassifiable Bone Fragments (<10 mm²)	199	1.4
	Chipped Stone Debitage (all <20 mm²)	22	7.6
	Chipped Stone Microdebitage (≤5 mm^2)	69	0.4
	Charcoal (Wood)	1	0.1
Light Fraction	Charcoal (Wood/Unidentified)	1	0.1
	Mixed Uncharred / Inorganic Residue	1	4.9
	Totals	***372***	***17.0***

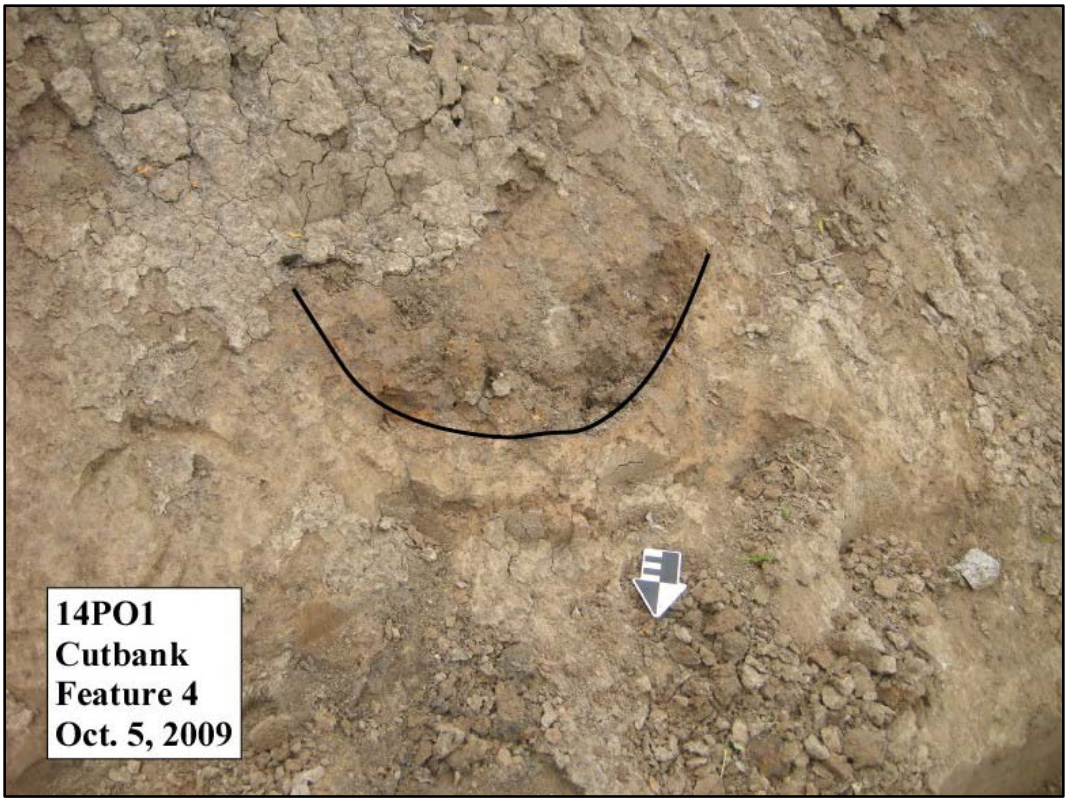

Figure 3.11 Profile View of F4 (adapted from Mandel et al. 2010).

The 22 chipped stone debitage (>5 mm²) from F4 were examined for attributes detailed in Table 2.4. With the exception of a single potlid, an ecofact spall caused by heat exposure (Purdy 1975:136), all of the debitage recovered are flakes (n = 21). None of the flakes exhibited evidence of recent breakage, although 19 of 21 specimens were incomplete due to fragmentation caused by exposure to direct, intense heat. In addition, a shiny, siliceous patina, or "ash sheen," was noted on much of the debitage recovered from F4. The entire debitage sample is Permian chert derived from the locally available Florence

Limestone. The small size class and extensive evidence of fire exposure limits the interpretative potential of the material quality and cortex attribute data for addressing procurement issues. Although variability in material quality and traces of cortical surfaces suggest multiple procurement loci and nodules are represented, the small size of all debitage (≤20 mm²) recovered from F4 precludes further assessment of this hypothesis because the artifacts are simply too small to provide reliable information about nodule appearance.

The technological attributes summarized in Table 3.3 include blank sub-type, reduction trajectory, and reduction stage. Although the majority of debitage (n = 11) from F4 is unclassifiable with respect to reduction trajectory or stage, evidence of late stage biface reduction, early-middle-late stage amorphous core reduction, and tool production is represented in the F4 debitage sub-assemblage. Although only late stage biface thinning flakes are represented in this small sample, the presence of all stages of core reduction flakes is not necessarily incompatible with biface reduction because small, thin, tabular blanks require little preparation to initiate the equivalent of a late stage biface reduction event. The small size range of all of the recovered debitage is further evidence that the Feature 4 assemblage represents a small biface production event. The tool production evidence consists of two items compatible with bifacial tool production. The first is a notching flake typical of the broad, shallow notches removed from thick, shallowly-notched dart points. The second is a ribbon-like pressure flake, a flake type associated with the finishing stages of tool production or maintenance, especially projectile points and bifacial knives.

F4 yielded evidence of a hearth-centric flintknapping event involving the production of a small, notched bifacial tool or tools. Despite the small sample size, the chipped stone debitage recovered from F4 provide an informative snapshot in time of the activities associated with this small feature. Also, the chipped stone artifacts recovered from F4 have the potential to be linked through refitting to other features and/or artifacts previously recovered at the Coffey site. The notching flake and pressure flake are specialized flake types that are particularly useful for refitting; because these flake types occur only during the final finishing stages of tool production, the flake scars resulting from their removal are less

likely to be obliterated by subsequent modifications. Refitting is a relatively recent and compelling addition to the methodological repertoire of the Central Plains. The Coffey site represents a unique opportunity to realize the potential of this analytical tool for resolving issues of horizontal and vertical integrity within the many occupation surfaces contained within the oxidized Gunder Member deposits preserved at Locality I.

Table 3.3 F4 Debitage: Flake Blank Sub-Type by Reduction Trajectory and Stage.

Reduction Trajectory:	Amorphous Core Reduction		Biface Reduction	Specialized Tool Production	NA	***Totals***
Reduction Stage:	*Early-Middle*	*Middle-Late*	*Late*	*Late*		
Blank Sub-Type						
Core Reduction Flake	4	1	--	--	--	***5***
Biface Thinning Flake	--	--	3	--	--	***3***
Notching Flake	--	--	--	1	--	***1***
Pressure Flake	--	--	--	1	--	***1***
Unclassifiable Flake Fragment	--	--	--	--	11	***11***
Totals	***5***		***3***	***2***	***11***	***21***

Feature 2009-5 [F5]

F5 (Figure 3.12) was a lenticular hearth feature characterized by a charcoal concentration surrounded by a perimeter of burned earth. No artifacts were observed during the collection of a single 10-12 L flotation sample (FS#4) from F5 on October 7, 2009. The feature measured approximately 87 cm along its horizontal axis, and 12 cm along its vertical axis; it is located at the south end of the East Cutbank feature cluster (Figure 3.9).

A charcoal sample [Radiocarbon Sample RDM-14PO1-02] was hand-collected from the center of the feature fill. Radiocarbon Sample RDM-14PO1-02 yielded an AMS ^{14}C age estimate of 5135 ± 20 [A1429; wood charcoal; $\delta^{13}C = -26.9$].

In addition to the radiocarbon sample, 27 items were recovered from F5 (Table 3.4). All of the items recovered from F5 exhibit evidence of exposure to intense heat. The three burned earth specimens were examined for traces of plant impressions, but none were observed. The 14 unclassifiable bone

fragments were burned and/or calcined, and were too fragmentary to merit further analysis, as were the 5 chipped stone microdebitage (≤5 mm^2). The charred plant remains recovered from F5 (FS#4) using flotation recovery include *Populus/Salix* and other deciduous wood charcoal, a single *Chenopodium* seed, and fragments of unidentifiable plant taxa.

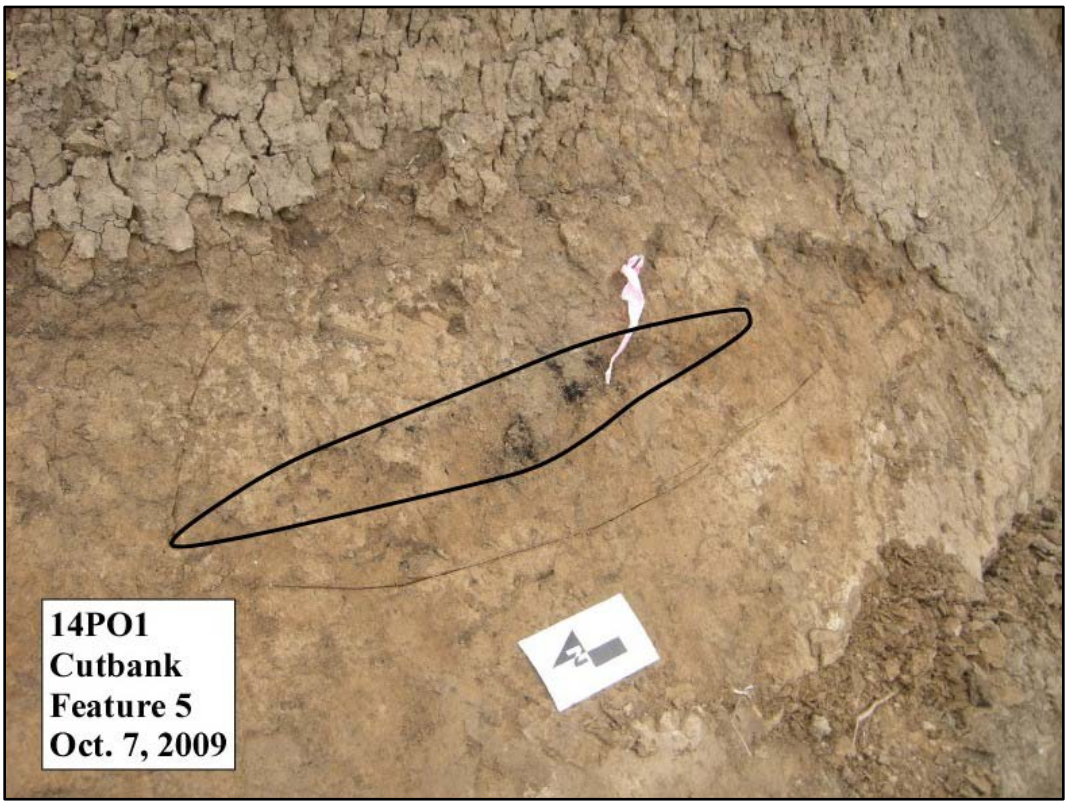

Figure 3.12 Profile View of F5 (adapted from Mandel et al. 2010).

Table 3.4. Cultural materials recovered from F5 (FS#4, Sample Volume: 10-12L).

Recovery Type	Artifact Class	Count	Weight (grams)
Heavy Fraction	Burned Earth	3	0.1
	Unclassifiable Bone Fragments (<10 mm^2)	14	0.1
	Chipped Stone Microdebitage (≤5 mm^2)	5	0.1
	Charcoal (Wood/Unidentified)	1	0.1
Light Fraction	Charcoal (*Chenopodium sp.* seed)	1	0.1
	Charcoal (Wood/Unidentified)	1	0.4
	Mixed Uncharred / Inorganic Residue	1	0.1
	Totals	***27***	***1.0***

Feature 2009-6 [F6]

Like F1, F6 (Figure 3.13) presented as a thin, horizontal band of charcoal. F6 is approximately 150 cm long, and 2 cm thick. F6 occurs ca. 35 cm above F1 (Figure 3.9). Two bulk charcoal samples were collected from F6: one from the south end of the feature (14PO1/2010.1/0101), and another from its north end (14PO1/2010.1/0102). No other cultural materials were observed or collected during the recordation of F6.

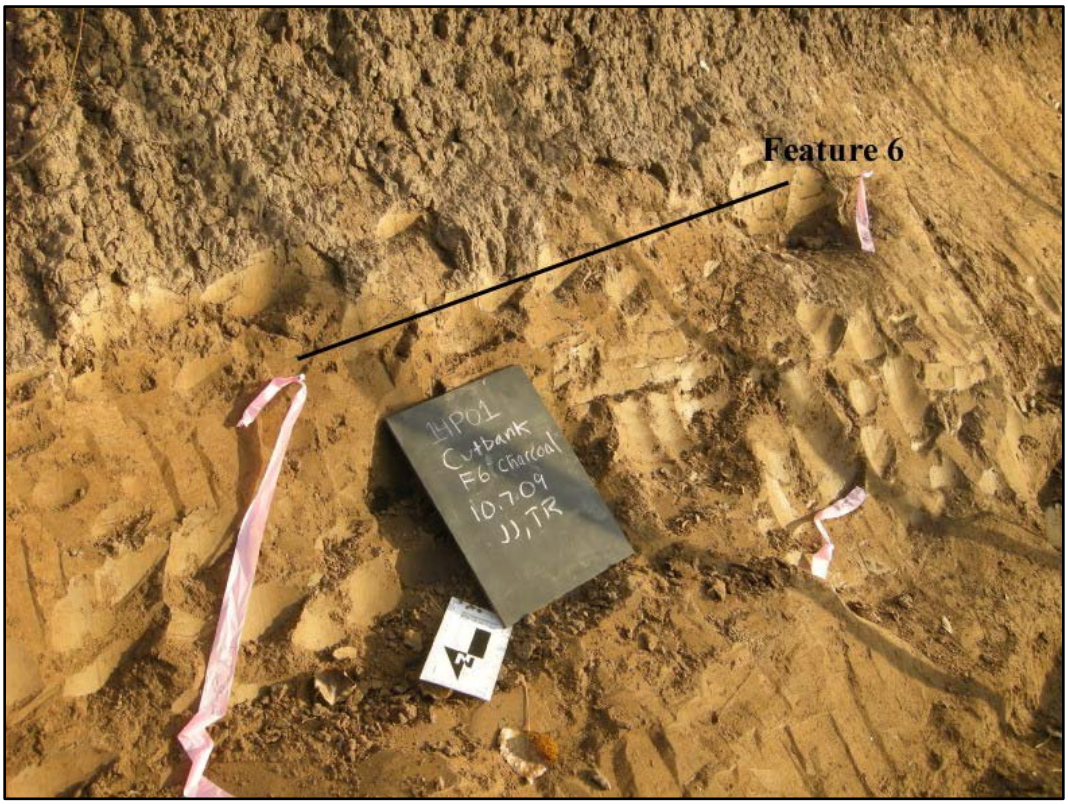

Figure 3.13 Profile View of F6 (adapted from Mandel et al. 2010).

Feature 2009-7 [F7]

F7 (Figure 3.14) was a lenticular hearth feature: charcoal, burned earth, and a single chipped stone item were observed *in situ* during recordation completed on October 7, 2009 (Figure 3.14). The feature measured 112 cm along its long axis, and 23.5 cm along its vertical axis. The base of F7 rests on or slightly above the upper surface of F1 (Figure 3.9).

A single 10-12L flotation sample (FS#3) was extracted from the feature fill, which extends further into the cutbank. Flotation processing of this sample yielded 100 items (Table 3.5). The seven burned earth specimens were examined for traces of plant impressions, but none were observed. The 72 burned and/or calcined bone fragments were too fragmentary to merit further analysis, as were the eight shell fragments and five chipped stone microdebitage (≤5 mm^2). The charcoal recovered from the light and heavy fraction samples consisted of deciduous wood charcoal and fragments of unidentifiable plant taxa. A chipped stone tool maintenance flake (0282.03), a fire-fractured late-stage biface thinning flake (0282.04), and a utilized flake tool (0282.02) were recovered from the flotation sample; one biface-thinning flake (0098) was hand-collected. The three chipped stone artifacts that exhibit no traces of thermal alteration suggest these items were discarded after F7 stopped being used as a hearth.

Table 3.5 Cultural materials recovered from F7 (FS#3, Sample Volume: 10-12L).

Recovery Type	Artifact Class	Count	Weight (grams)
Heavy Fraction	Burned Earth	7	0.2
	Unclassifiable Bone Fragments (<10 mm^2)	72	0.2
	Unclassifiable Shell Fragments	8	0.1
	Chipped Stone Tool (20-40 mm)	1	5.8
	Chipped Stone Debitage (all <20 mm^2)	2	0.6
	Chipped Stone Microdebitage (≤5 mm^2)	5	0.1
	Charcoal (Wood)	1	0.1
Light Fraction	Charcoal (Wood/Unidentified)	1	0.1
	Mixed Uncharred / Inorganic Residue	1	2.8
Hand-Collected	Bulk Charcoal Sample	1	149.7
Piece-Plotted	Chipped Stone Debitage	1	2.4
	Totals	***100***	***162.1***

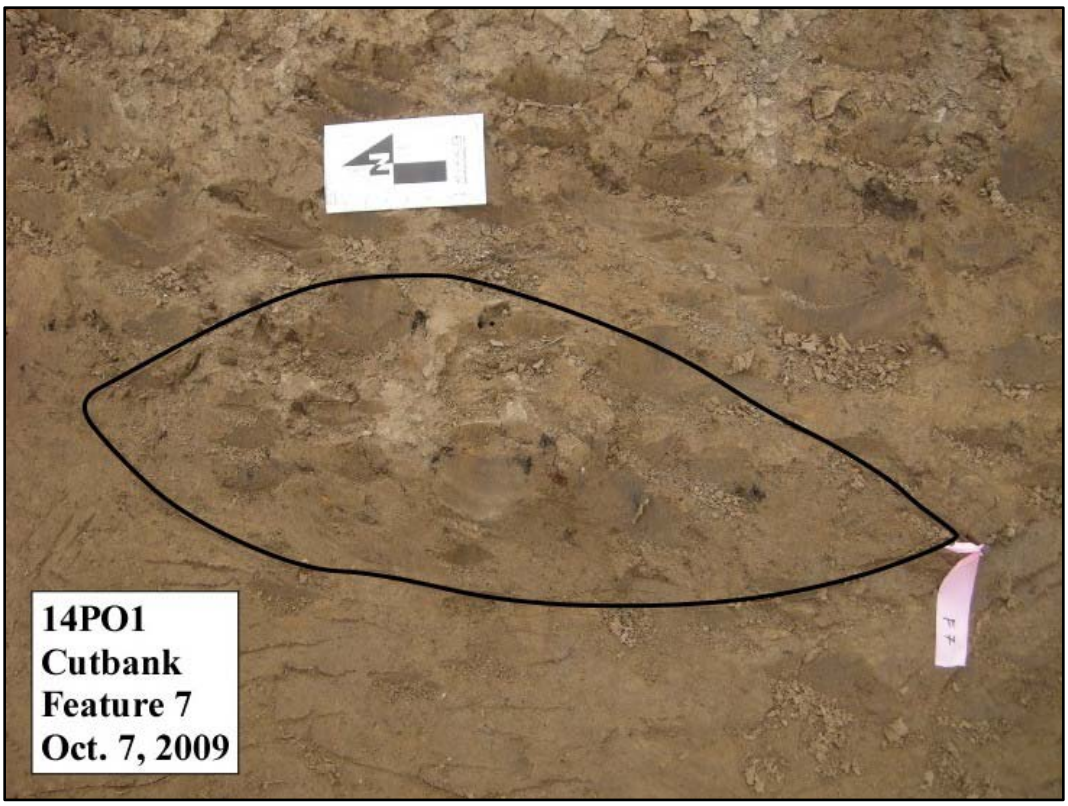

Figure 3.14 Profile View of F7 (adapted from Mandel et al. 2010).

The unburned biface thinning flake and two tool-related chipped stone artifacts are items associated with the final stages of biface production and toolkit maintenance. The tool maintenance flake (0282.03) is an edge rejuvenation flake struck from the edge of a unimarginally retouched flake scraper of Wreford chert. The discarded flake tool (0282.02) is a combination knife/scraper tool with two utilized edges; the artifact exhibited traces of metallic residue and fresh fractures indicative of damage caused by shovel or trowel contact (Figure 3.15). The absence of thermal alteration on these three chipped stone artifacts, all of which were recovered from an unambiguous hearth context, indicates that the biface production and toolkit maintenance activities occurred after the hearth was extinguished.

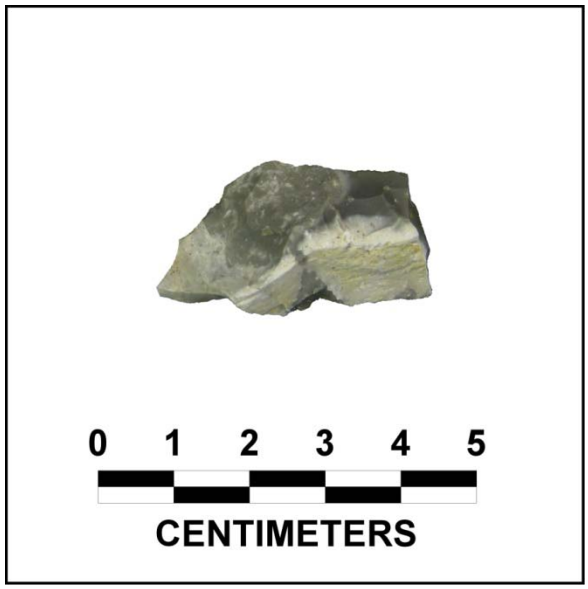

Figure 3.15 Specimen 14PO1/2010.1/0282.02 from F7 is a combination knife/scraper tool of Florence chert with two utilized edges (adapted from Mandel et al. 2010). Fresh fractures and traces of metallic residue observed on the cortex surface and are indicative of damage caused by shovel or trowel contact.

Feature 2009-8 [F8]

F8 (Figure 3.16) is a basin-shaped concentration of charcoal and burned earth recorded on October 7, 2009 (Figure 3.9). The feature measured 80.5 cm along its long axis, and 28.0 cm along its vertical axis. In terms of volume, F8 is the largest of the six features depicted in Figure 3.9.

A single 10-12L flotation sample (FS#2) was extracted from the feature fill, which extends further into the cutbank. Flotation processing of this sample yielded 515 items (Table 3.6). All seven chipped stone debitage (≤20 mm²) are non-cortical, unclassifiable flake fragments of Florence chert that exhibit evidence of direct exposure to fire. The charcoal recovered from the light and heavy fraction samples consisted of deciduous wood charcoal and fragments of unidentifiable plant taxa. Burned earth and unclassifiable burned and/or calcined bone fragments (<10 mm²) comprise the bulk of the recovered feature contents. In comparison to the other three flotation samples, the relative dearth of chipped stone and abundance of bone fragments recovered from F8 suggests it may have performed a culinary function.

Figure 3.16 Oxidized Gunder Member Feature Cluster: Profile View of F8 (adapted from Mandel et al. 2010).

Table 3.6 Cultural materials recovered from F8 (FS#2, Sample Volume: 10-12L).

Recovery Type	Artifact Class	Count	Weight (grams)
Heavy Fraction	Burned Earth	73	2.8
	Unclassifiable Bone Fragments (<10 mm²)	414	2.2
	Chipped Stone Debitage (all <20 mm²)	7	0.9
	Chipped Stone Microdebitage (≤5 mm^2)	18	0.1
	Charcoal (Wood)	1	0.1
Light Fraction	Charcoal (Wood/Unidentified)	1	0.1
	Mixed Uncharred / Inorganic Residue	1	0.7
	Totals	***515***	***6.9***

Piece-Plotted Isolates

Three piece-plotted artifacts were collected from the feature cluster area exposed beneath the 1974–1975 KU excavation block: two fire-cracked rocks (0097 and 0100), and an extremely interesting flake tool made from a large, thin, flat flake with a distinctive hinge termination (0099) (Figure 3.17). Traces of a distinctive reddish-brown substance (red ocher or dried blood?) occur on all surfaces of the

flake tool, but are concentrated along the two utilized knife edges. The utilization is on alternate faces so that the utilized edge is always on the left side of the tool (in dorsal view, the retouched edge is on the left; in ventral view, the retouched edge is also on the left). This distinctive pattern of utilization indicates that the tool was designed for hand-held use by a right-handed individual. Traces of shiny metallic residue present on the dorsal surface around a fresh fracture are indications of trowel damage incurred when the artifact was discovered during the delineation of F8.

Figure 3.17 Specimen 14PO1/2010.1/0099 is a piece-plotted flake knife recovered from the oxidized Gunder Member feature cluster located in the cutbank exposure beneath the 1974–75 KU excavation block remnant (adapted from Mandel et al. 2010). The artifact is coated with a distinctive reddish brown substance that resembles red ocher mixed with dried blood.

Summary of the Flotation Results

The contents of the four 10-12L flotation samples collected from Features 4, 5, 7, and 8 are summarized in Table 3.7. The purpose of this comparison is to illustrate how variability in the contents informs the interpretation of feature function. These samples are directly comparable because they are equivalent in terms of volume and processing: all four flotation samples were processed using the same equipment on a single day by Mr. Kessler. None of the flotation samples were pre-soaked in trisodium phosphate to deflocculate the hard, clayey sediments prior to flotation. Although field photos and field

observations document the ample abundance of charcoal in all four features, the amount of charcoal recovered is trivial. Poor preservation or the lack of pre-treatment may explain the discrepancy.

Table 3.7 Flotation Sample Results, n = 1 (10-12 L) sample per Feature.

		F4		**F5**		**F6**		**F8**		**Totals by Artifact Class**	
Recovery Type	**Artifact Class**	#	Wt (g)	#	Wt (g)	#	Wt (g)	#	Wt (g)	#	Wt (g)
Heavy Fraction	Burned Earth	79	2.5	3	0.1	7	0.2	73	2.8	***162***	***5.6***
	Bone Fragments (<10 mm²)	199	1.4	14	0.1	72	0.2	414	2.2	***699***	***3.9***
	Shell Fragments	--	--	--	--	8	0.1	--	--	***8***	***0.1***
	Chipped Stone Tools	--	--	--	--	1	5.8	--	--	***1***	***5.8***
	Chipped Stone Debitage (<20 mm²)	22	7.6	--	--	2	0.6	7	0.9	***31***	***9.1***
	Chipped Stone Microdebitage (≤5 mm^2)	69	0.4	5	0.1	5	0.1	18	0.1	***97***	***0.7***
	Charcoal (Wood)	1	0.1	1	0.1	1	0.1	1	0.1	***4***	***0.4***
Light Fraction	Charcoal (Chenopodium sp. Seed)	--	--	1	0.1	--	--	--	--	***1***	***0.1***
	Charcoal (Wood/Unidentified)	1	0.1	1	0.4	1	0.1	1	0.1	***4***	***0.7***
	Mixed Uncharred / Inorganic Residue	1	4.9	1	0.1	1	2.8	1	0.7	***4***	***8.5***
Totals by Feature		***372***	***17.0***	***27***	***1.0***	***100***	***162.1***	***515***	***6.9***		

All four features yielded sufficient quantities of burned materials to demonstrate a hearth function. At first glance, similarities between F4 / F8 and F5 / F7 are evident in terms of the quantities of burned earth, bone fragments, and chipped stone recovered from each flotation sample (Table 3.7). These similarities are mirrored in the cross-sectional profiles shared by each set (Figure 3.9): F4 and F8 are basin-shaped, while F5 and F7 exhibit lenticular profiles. These fundamental differences suggest that each set of hearth features performed different basic functions. The frequencies of blackened and calcined bone fragments recovered from F4 and F8 suggest these features were the locus of slow roasted food preparation and hearth-centric food consumption and discard. Based on the quantity of burned earth recovered from F4 and F8, those culinary activities must have occurred over a longer duration than is indicated by the sparse burned earth and thin, lenticular profiles of F5 and F7. In contrast, F5 and F7 yielded possible seasonal indicators such as (probable) mussel shell fragments in F7 and a charred

Chenopodium sp. seed in F5. These materials suggest warm season usage. It is somewhat tempting to speculate that the basin-shaped hearths represent cool season food preparation, while the lenticular hearths represent warm season usage, but the range of variability inherent in the food preparation methods used to prepare different foods (fish vs. small- to medium-sized mammals, for instance) precludes this overly simplistic interpretation. The low incidence of fire-cracked rock observed in and around these features rules out their use as earth ovens for roasting plant foods.

The chipped stone artifacts recovered from each of these features provide some clues about other hearth-centric activities. The fire-fractured chipped stone debitage recovered from F4 indicates the preparation of a small, notched bifacial tool like a projectile point or knife occurred while the hearth was in active use; the associated knapping debris was discarded directly into the fire. In contrast to F4, F8 yielded a smaller quantity of less informative debitage. This difference is interesting because it documents variability in the organization of domestic activities around otherwise similar features. F5 yielded almost no chipped stone or material culture of any kind. Most chipped stone artifacts recovered from F7 lack traces of thermal alteration, indicating deposition after the hearth was extinguished or abandoned. The chipped stone artifacts recovered from F7 are interesting because the items are all associated with the final stages of biface production (biface thinning flakes) and toolkit maintenance (a discarded flake tool and a scraper rejuvenation flake).

Stratigraphic Correlation with Schmit's Unit III

The regional significance of the Middle Archaic archeological record of the Coffey site is based on its rich assemblage of features contained within well-delineated cultural levels (Hofman 1996:93-94; Schmits 1976, 1978, 1980, 1981; Stein 1975; Wedel 1986:74-79). During the 1970–75 fieldwork, a stratified sequence of 12 cultural horizons (5-15 cm thick) reportedly separated by sterile alluvial fills was defined for Unit III. The horizon-levels assigned to each level were used subsequently to organize the recovered Archaic-age cultural materials for analysis (Schmits 1980:87). The 1975–75 block excavations, a portion of which is all that remains of KU Locality I (Figure 2.3), were initiated to investigate the upper

three cultural horizons of Unit III, cultural strata that were first discovered during the 1973 field season (Schmits 1981:75). In 1974–75, a backhoe and a bulldozer were used to remove the overlying Unit V (cf. reduced Gunder Member) sediments to provide access to the upper Unit III cultural deposits for excavation (Schmits 1981:75-80). A 4 cm-thick red ferruginous band was encountered below the base of the third level excavated within Area B, located at the south end of the 1974-75 block (Schmits 1981:77). This band, a stratigraphic marker for Horizon III-4, enabled Schmits to correlate the three cultural levels removed from Area B with Horizons III-1, III-2, and III-3 as defined during the 1973 fieldwork (Schmits 1978, 1981:75-77). The 1974 Area B excavation (Figure 2.6) comprises at least some portion of the extant excavation block that appears as a gully-like feature filled with Camp Creek Member sediment in the east cutbank exposure (Appendix A).

A recent profile photo taken from the west cutbank of the Big Blue River (Figure 3.8) clearly depicts the position of the Camp Creek Member-filled excavation block cut down into oxidized Gunder Member sediments. This suggests that, at minimum, Horizon III-1 was partially or completely removed from the area that overlies the oxidized Gunder Member feature cluster in the east cutbank exposure (Appendix A, Figure 3.9). During investigation of the oxidized Gunder Member feature cluster on October 7, 2009, a red ferruginous band was observed diving below F4; it was traced beneath F1. Dr. Mandel examined the band, and identified it as a non-cultural redoximorphic feature that formed at the base of a paleochannel. This geomorphological feature may correlate with Horizon III-4 (Schmits 1981:77), or one of the other oxidized bands noted during the excavations (Schmits 1980:87-88).

Two radiocarbon dates were obtained from the 1974 Area B block excavation on charcoal collected from basin-shaped features with cross-sectional profiles comparable to F4 and F8. Feature 28 (Horizon III-1) yielded a radiocarbon date of 5030 ± 65 ^{14}C yr B.P. (WIS-776), and Feature 37 (Horizon III-3) yielded a date of 5140 ± 65 ^{14}C yr B.P. (WIS-779) (Schmits 1981:92, 94). In comparison, the 2009 AMS dates obtained on wood charcoal are reversed: the date obtained from F5 (5135 ± 20 ^{14}C yr B.P.) is older than the date obtained from F4 (5050 ± 20^{14}C yr B.P.) (Table 2.1; Figure 3.9). Schmits also documented stratigraphic inversions of radiocarbon dates from the Coffey Site: the new 2009 dates

overlap with radiocarbon dates reported from Horizons III-1 to Horizon III-7 (1980:Table 17 and 1981:Table 1). The inverted radiocarbon dates may be caused by dating charcoal old wood; AMS dates on charred seeds may yield a more refined radiocarbon chronology.

Radiocarbon dating issues aside, the staggered character of the oxidized Gunder Member features documented in Figure 3.9 raise concerns regarding the stratigraphic integrity of the horizon- level units defined during the 1970–1975 fieldwork. A simple visual review of the Figure 3.9 profile reveals that a 5-15 cm thick horizon-level system fails to account for the staggered vertical distribution of features (F4, F5, F7, and F8), or to account for the staggered vertical associations of the features relative to the two discontinuous occupation surfaces (F1 and F6). During all of the 1970s excavations, vertical control was based on measurements made relative to string line levels tied to fixed datums, typically metal fence posts set within the various excavation blocks (cf. Schmits 1981:Figure 16). Given contemporary standards of precision, it will not be possible to rely solely on curated excavation data to resolve issues concerning the vertical distribution of cultural stratigraphy within the oxidized Gunder Member.

Rather, the complex vertical distribution of the small sample of six features documented by this study suggest that the internal stratigraphy of the oxidized Gunder Member is potentially far more complex than was recognized during the 1970–75 field investigations. The implication of this finding is that understanding of the cultural stratigraphy of Unit III is now in need of revision. Further consideration of the vertical and horizontal complexity of the cultural features and artifact distributions within the oxidized Gunder Member will require acquisition of a new high resolution data set. A modern excavation that utilizes three-dimensional piece-plotting of artifacts, features, and "unit-wide" stratigraphic markers like the red band noted in Horizon III-4 is recommended before what little remains of Unit III is destroyed completely by erosion.

Archeological Contexts: Backhoe Trench 2009-1 [BHT1]

DIMENSIONS: 8.0 m (E-W) x 1.9 m (N-S) x 2.4 m deep

In 2009, two backhoe trenches were excavated in the area of Locality I to investigate the T-1 (BHT1) and T-2 (BHT2) terraces (Figure 2.4). By sheer coincidence, the southern edge of BHT1 intersected the northern edge of a backhoe trench excavated in 1972 (Figure 2.4, Appendix A). BHT1 was initiated near the edge of the cutbank and excavated eastward to intersect the toe of the scarp that separates the T-1 and T-2 surfaces and to expose the contact between the Severance Formation and the overlying Holocene alluvium. The Severance Formation underlies the adjacent T-2 terrace and slopes westward, eventually dipping beneath the Holocene deposits that comprise the T-1 fill in the vicinity of BHT1 (Figure 3.18).

Three profiles were described on the north wall of BHT1 (Figures 3.18 and 3.19). A total of 138 artifacts were collected during the excavation of BHT1, including 41 items found *in situ*, and 97 unprovenienced items (82 recovered from the trench backdirt plus 15 items collected from stepped surfaces within the excavated trench).

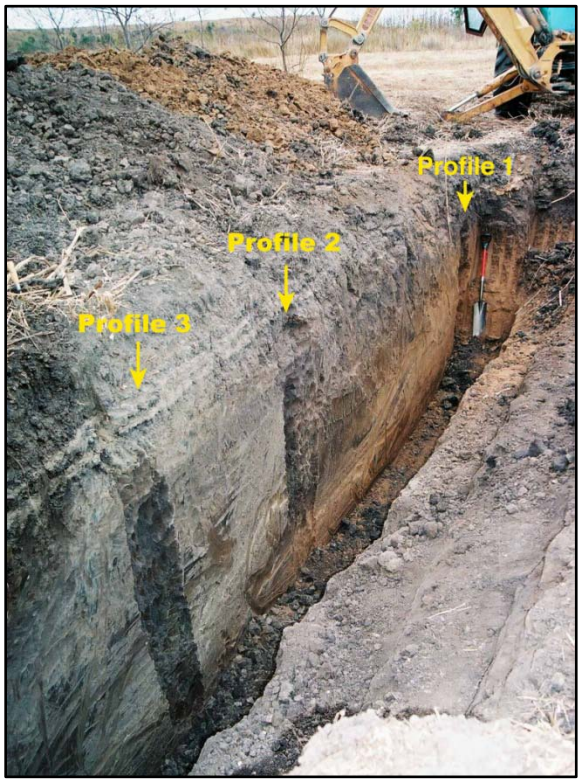

Figure 3.18 View of the north wall of BHT1 showing the locations of the three profiles described along the north trench wall (adapted from Mandel et al. 2010). The reddish sediment is the Severance Formation. View is to the northeast.

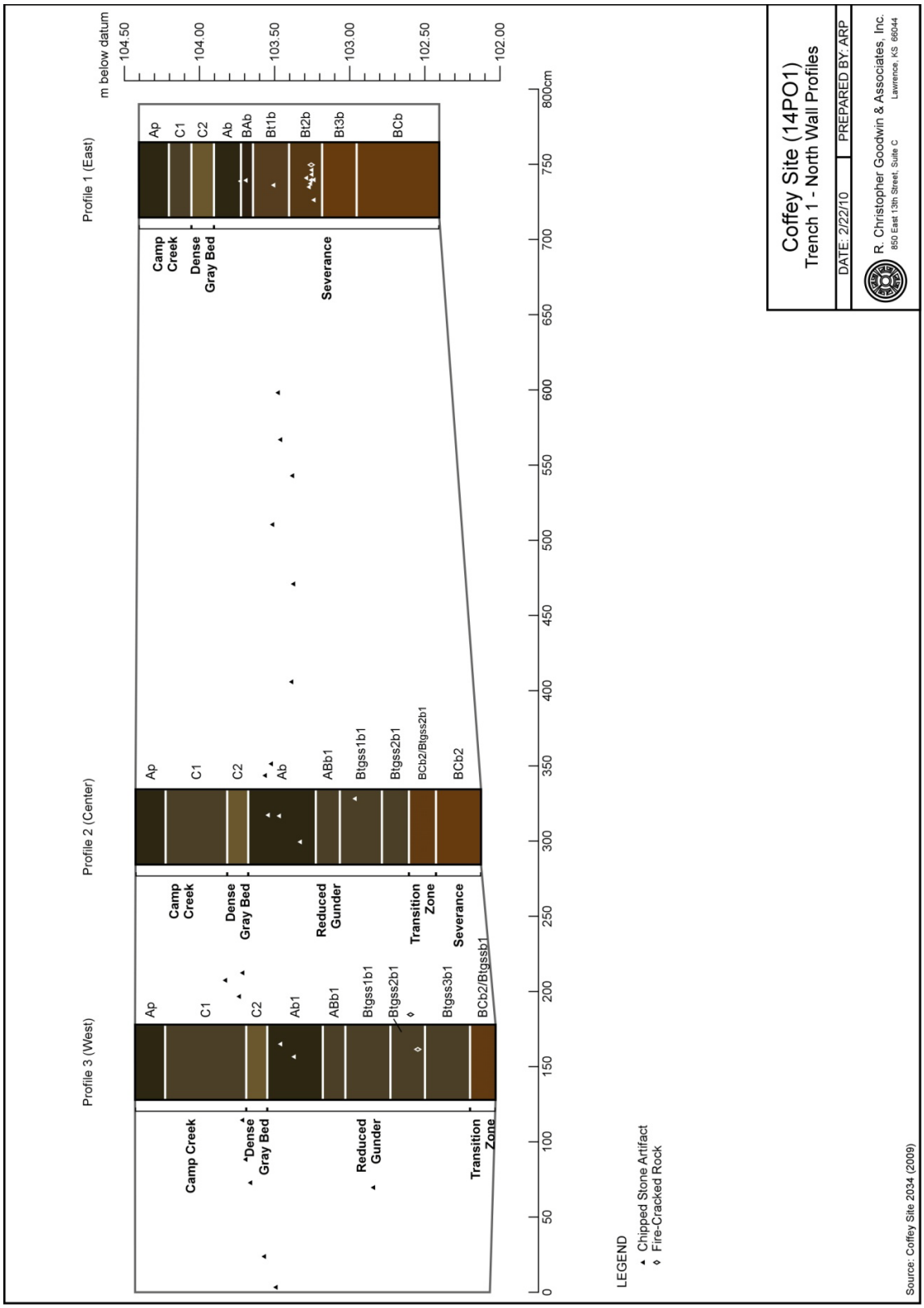

Figure 3.19 Diagram of the north profile wall of BHT1 that shows the spatial pattern of stratigraphic units, associated cultural deposits, and soil horizons observed in the three profiles (adapted from Mandel et al. 2010).

The group of 97 unprovenienced artifacts includes 6 fire-cracked rocks, 1 pseudo-debitage spall, and 90 chipped stone artifacts (82 debitage, 1 early stage tabular core, and 7 tools). The unprovenienced tool sample contains a Stage 2 biface fragment and a unimarginally modified flake scraper illustrated in Figure 3.20. Other tools include a biface fragment and four utilized flakes (two gravers, one knife, and one unclassifiable fragment). The majority of these items (n = 84) exhibit evidence of recent breakage, predominantly caused by plow damage. Of the 13 specimens that do not exhibit traces of recent damage, all but one item is <2 cm². Given its lack of stratigraphic context, there is little significant information to be gained from further discussion of this sample.

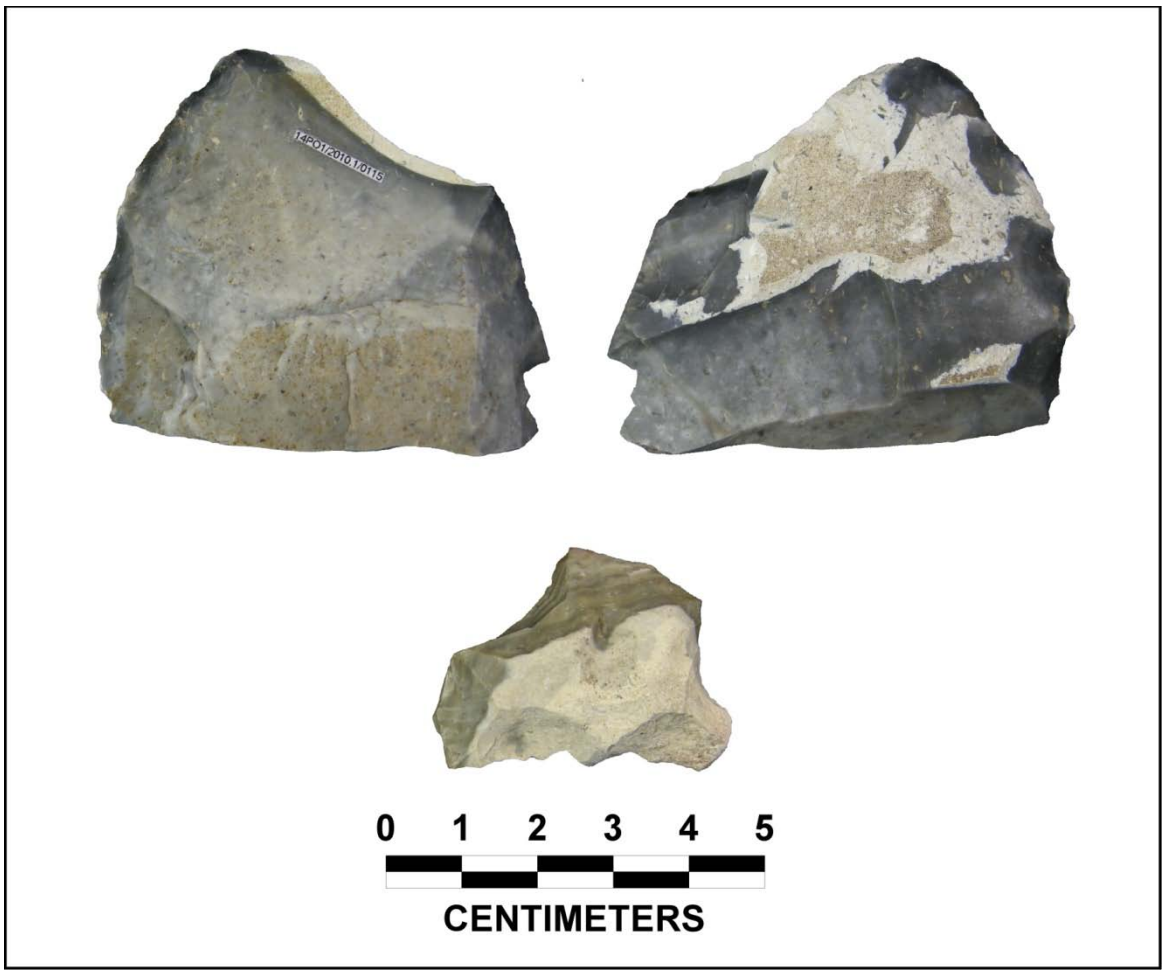

Figure 3.20 Chipped stone tools recovered from the backdirt of BHT1 (adapted from Mandel et al. 2010). Specimen 14PO1/2010.1/0115 (top row) is a Stage 2 biface fragment fashioned from a thin, tabular residual cobble of Florence chert. Specimen 14PO1/2010.1/0124 (bottom row) is a unimarginally retouched flake scraper on a core reduction flake of Florence chert.

BHT1: Profile 1

Two stratigraphic units were observed in Profile 1 of BHT1: the Camp Creek Member and the Severance Formation (Figures 3.19 and 3.21). The Camp Creek Member is 50 cm thick and rests unconformably on the Severance Formation. A thick, well expressed paleosol with A-Bt horizonation is developed in the Severance Formation (Mandel et al. 2010:Table C-19). Seventeen artifacts were recovered from three strata within the late Pleistocene-age Severance Formation (Figure 3.19, Table 3.8). The two chipped stone artifacts collected from the BAb horizon include a fire-fractured fragment of angular debris and a late stage biface thinning flake. Both specimens exhibit evidence of recent excavation-related breakage. Additional evidence of recent damage was collected from the Bt1b horizon in the form of two items classified as pseudo-debitage.

During the preparation of Profile 1, Dr. Mandel detected an artifact cluster of 13 items in the Bt2b horizon of the paleosol developed in the Severance Formation (Figures 3.21 and 3.22). The recovery of cultural materials at depths of 60-70 cm into the Severance Formation, ca. 1.1 m below surface, is intriguing because of the antiquity of the unit (ca. 18,000-24,000 B.P.) and due to the absence of krotovina and other forms of bioturbation around the artifact cluster.

Figure 3.23 illustrates ten artifacts from the Bt2b cluster, but excludes three specimens of pseudo-debitage (0079, 0082, 00983) struck from one of two conjoined artifacts (0077/0078/0079 and 0080/0081/0082/0083) broken by shovel contact during preparation of Profile 1. All ten artifacts fall within the 2-4 cm size class, and represent a minimum of six analytical nodules. The only tool is a utilized graver spur (0077) on the proximal portion of a three-part conjoined lamellar flake (0077/0078/0079). The nine debitage items include a medial-distal biface thinning flake fragment (0074), an early stage core reduction flake (0091), and five flake fragments that are unclassifiable with respect to reduction trajectory. In addition to a single specimen of fire-cracked sandstone, evidence of exposure to fire is present on three of the chipped stone artifacts (0074, 0075, and 0091). Nine of the 13 artifacts exhibit evidence of shovel contact damage.

As a sample of a possible Pre-Clovis occupation, this group of artifacts is fairly uninformative, although its clustered association within a late Pleistocene stratigraphic context is very intriguing. A controlled excavation of the adjacent surface to the north of the findspot is highly recommended to establish an archeological context for this small but interesting artifact cluster. Other potential pre-Clovis occupations have been identified in the region, although none in association with the Severance Formation. Notable occurrences include: the Burnham site in northwestern Oklahoma (Wyckoff, Theler, and Carter 2003); the La Sena mammoth site at Medicine Creek Reservoir in southwestern Nebraska (Holen 2006); the Lovewell mammoth site (14JE306) at Lovewell Reservoir in Jewell County, Kansas (Holen 2006, 2007); the Shriver site in northwestern Missouri (Reagan and Evans 1976; Reagan et al. 1978; Rowlett and Garrison 1984; O'Brien and Wood 1998:38-39); and the Big Eddy site in southwestern Missouri (Lopinot, Ray and Conner 1998, 2000; Ray et al. 1998).

Table 3.8 BHT1: Profile 1 Artifact Distribution.

Severance Formation	**DEB**	**TOOL**	**FCR**	**PDEB**	***Grand Totals***
BAb (68-76 cm bgs)	2	--	--	--	***2***
Bt1b (76-100 cm bgs)	--	--	--	2	***2***
Bt2b (100-122 cm bgs; cultural zone at 110-120 cm bgs)	8	1	1	3	***13***
Grand Totals	***10***	***1***	***1***	***5***	***17***

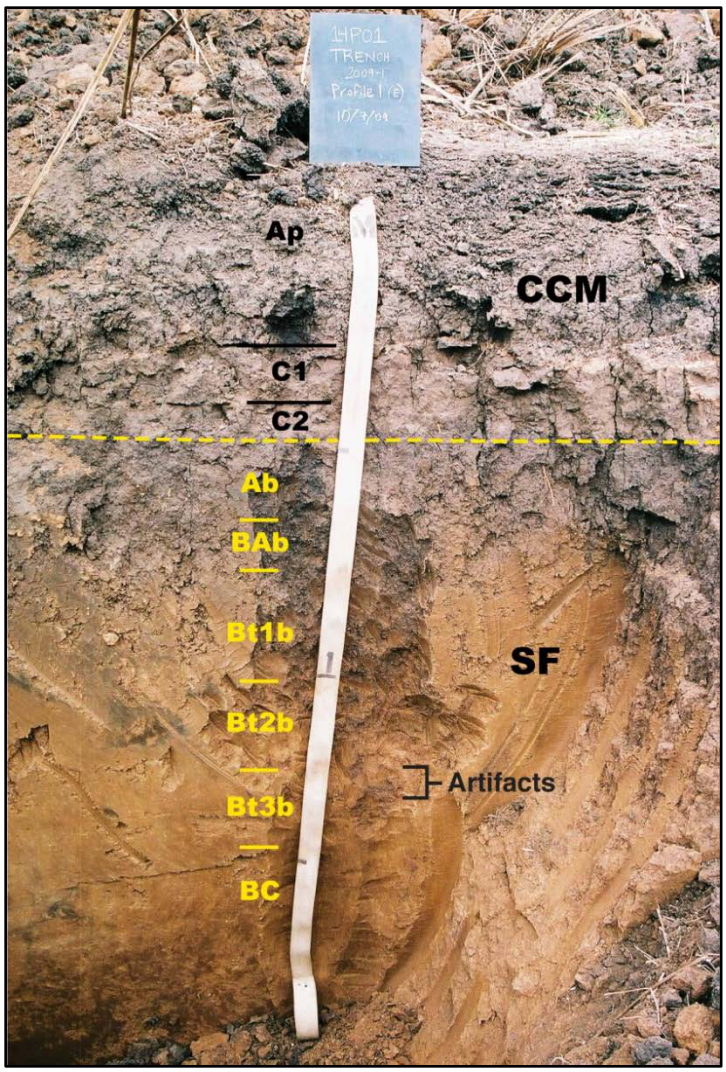

Figure 3.21 Stratigraphic units and soil horizons observed in Profile 1 at the east end of the north wall of BHT1 (adapted from Mandel et al. 2010). The location of the Bt2b artifact cluster in the Severance Formation is bracketed in the photograph. View is to the north.

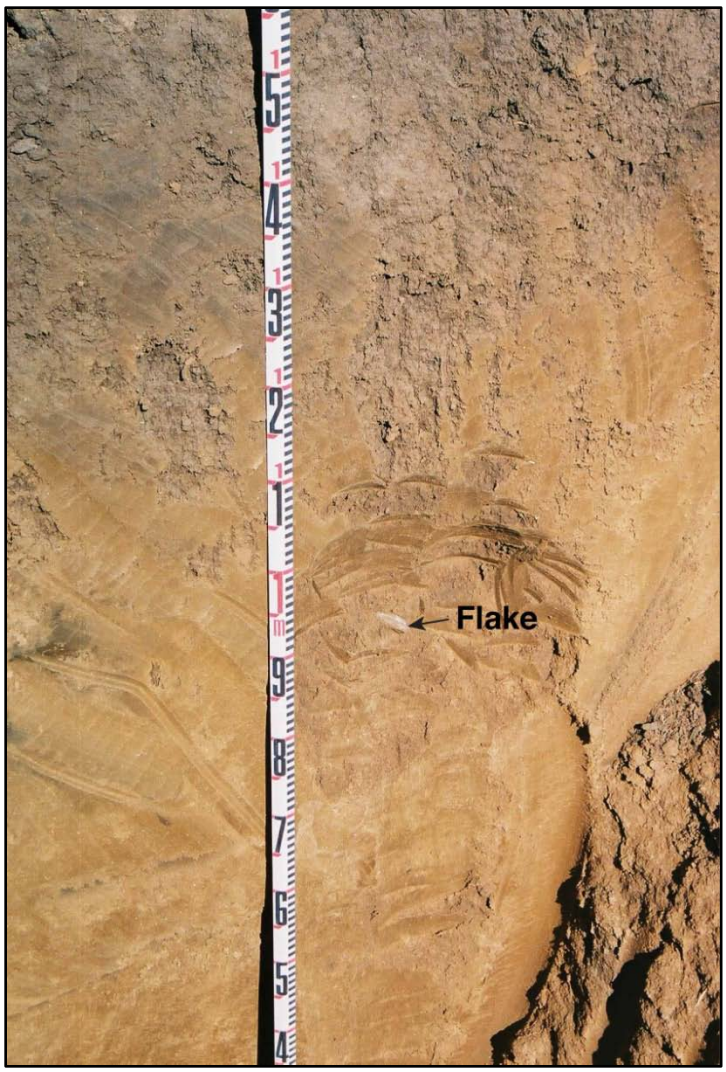

Figure 3.22 Location of an artifact cluster documented in the Bt2b horizon of Profile 1 on the north wall of BHT1 (adapted from Mandel et al. 2010). The artifact cluster apparently is associated with a paleosol developed in the Wisconsinan-age Severance Formation. View is to the north.

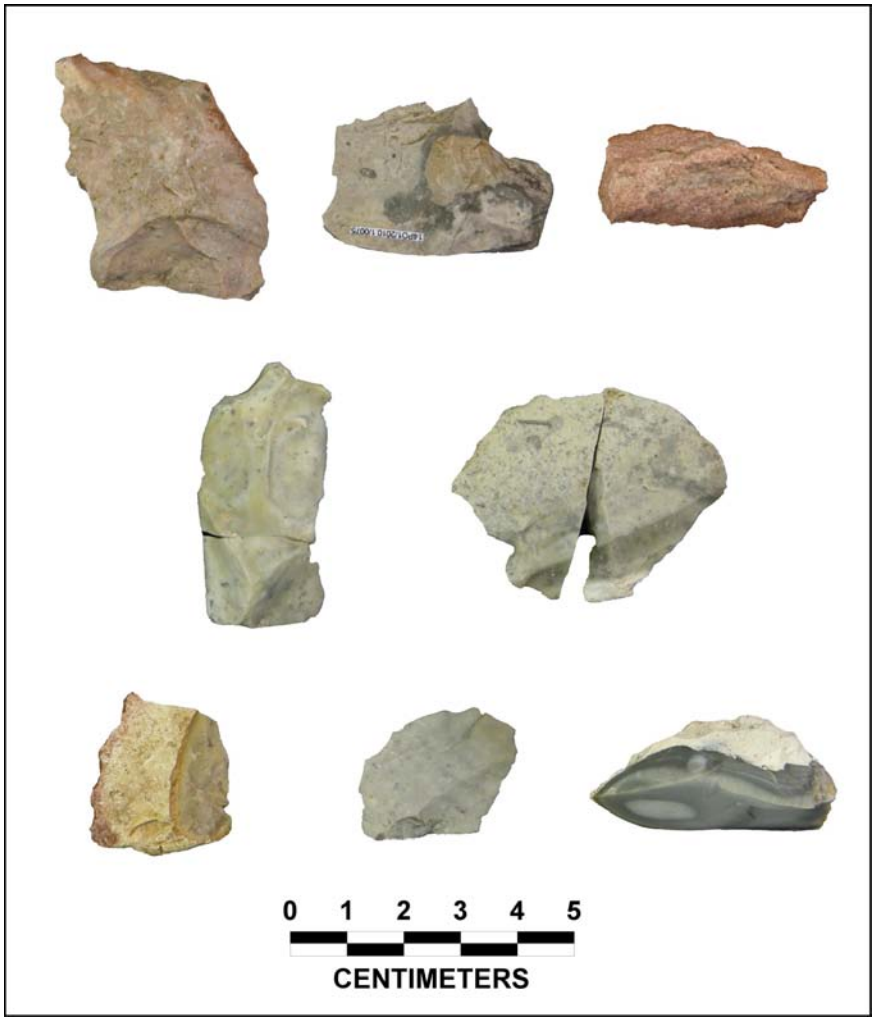

Figure 3.23 Chipped stone and fire-cracked rock concentration found in the Bt2b Horizon (100-122 cm bgs) of the Severance Formation in Profile 1 of BHT1 (adapted from Mandel et al. 2010). Top row (left to right): Specimens 0074, 0075, and 0076. Center Row (left to right): 0077 [top] / 0078 [bottom], 0081 and 0080. Bottom row (left to right): 0091, 0092, and 0093.

BHT1: Profiles 2 and 3

Approximately 1 meter west of Profile 1, the Severance Formation dips beneath the reduced Gunder Member, which is capped by a deposit of Camp Creek alluvium that thickens towards the west. The artifacts discussed in this section are from similar strata, and are grouped accordingly in Table 3.8.

In Profile 2, the Severance Formation dips below reduced Gunder Member alluvium; stratified Camp Creek Member alluvium caps the reduced Gunder (Figure 3.19 and 3.24). The reduced Gunder Member consists of gleyed, clay-rich alluvium that has been modified by a soil with a well-expressed A-

Btgss profile (Mandel et al. 2010:Table C-20). A thin transitional zone separates the reduced Gunder Member alluvium from the underlying Severance Formation.

The stratigraphy observed in Profile 2 is similar to that of Profile 3: the Camp Creek Member overlies reduced Gunder Member alluvium (Figure 3.19 and 3.25). However, only the transitional zone between the reduced Gunder Member and the Severance Formation was exposed in the lower 17 cm of the profile; the Severance Formation was not encountered (Mandel et al. 2010:Table C-21).

Table 3.9 Artifacts collected from Stratigraphic Units documented in Profiles 2 and 3 of BHT1.

	CORE	DEB	GRAV	PDEB	*Grand Total*
Camp Creek Member					***9***
Plow Zone	--	9	--	--	*9*
Reduced Gunder Member					***14***
Plow Zone	--	--	--	1	*1*
AB		9	--	--	*9*
Ab1	1	2	--	--	*3*
Btgss1b1	--	1	--	--	*1*
Severance Formation					***1***
Bt2b	--	--	1	--	*1*
Grand Total	***1***	***21***	***1***	***1***	***24***

Outside of Profile 1, a single piece of gravel was the only item encountered in the Severance Formation. Fourteen chipped stone artifacts were found in three broadly defined clusters of reduced Gunder Member deposits: the Ab/Ab1 horizon, the Btgss1b1, and the Btgss2b1. The vertical dispersion of chipped stone artifacts documented within the Ab/Ab1 horizon of the reduced Gunder Member of BHT1 (Figure 3.19) suggests that the discrete cultural zones observed in CP1 strata are also likely to be comparably dispersed if the deposits were to be investigated further. The reduced Gunder Member sediments described in BHT1 exhibit slickenside features that demonstrate the potential for argilliturbation of associated cultural deposits. In addition, nearly all (22 of 24) artifacts listed in Table 3.8 were damaged extensively by shovel, backhoe or trowel blade contact during the mechanical and hand excavation of the extremely hard, compact sediments encountered in the reduced Gunder Member. The

research significance of a predominantly chipped stone assemblage so heavily damaged by the excavation process itself as to be rendered analytically cumbersome is a point worthy of further consideration. No features were observed within the reduced Gunder Member deposits exposed in CP1, the east cutbank exposure, or BHT1. In comparison to the oxidized Gunder Member, the potential for cultural deposits of integrity and significance in the reduced Gunder Member is greatly diminished. Although bracketing the numerical age of the reduced Gunder Member is a research question of interest, archeological evaluation of the reduced Gunder Member should be ranked as lower priority than additional work in the oxidized Gunder Member because the older sediments possess greater significance and integrity.

Archeological Contexts: Backhoe Trench 2009-2 [BHT2]

DIMENSIONS: 6.5 m (E-W) x 2.7 m (N-S) x 3.0 m deep

BHT2 was excavated on the apex of the T-2 terrace (Figure 2.4). BHT2 exposed two Pleistocene-age stratigraphic units: the Peoria Loess and coarse-grained facies of the Gilman Canyon Formation (Figure 3.26). The Peoria Loess is 1.60 m thick; it has been strongly modified by soil development (Mandel et al. 2010:Table C-22). Black, wavy laminae enriched with organic matter and small fragments of wood charcoal were observed in a 30 cm-thick zone above the clear boundary that separates the Peoria Loess from the underlying Gilman Canyon Formation. Charcoal collected from these laminae yielded AMS radiocarbon ages of 19,790±100 and 19,110±90 yr B.P. (Table 2.1) These ages are consistent with basal dates on Peoria Loess in the Eastern Plains (Martin 1993; Johnson et al. 1993; May and Holen 1993; Mandel and Bettis 1995, 2001).

Profile 1 (Figure 3.26) depicts a scatter of four piece-plotted chipped stone artifacts encountered within the Peoria Loess during the excavation of BHT2. Based on the geoarcheological evidence (Mandel et al. 2010:Chapter 5), there is little reason to expect *in situ* cultural deposits to occur within the Peoria Loess much below the depth of the surface soil (ca. 50 cm bgs) unless pre-Clovis occupation(s) occurred at the site. The Gilman Canyon Formation is not expected to yield evidence of human occupation at the Coffey site.

The artifact sample collected from BHT2 is a mixed plow zone / machinery-damaged assortment of chipped stone debitage, most of which are smaller than 2 cm^2 (Table 3.9). Two insignificant chipped stone tools were collected from the backdirt: a Stage 2 biface fragment (Figure 3.27), and a utilized flake biface thinning flake.

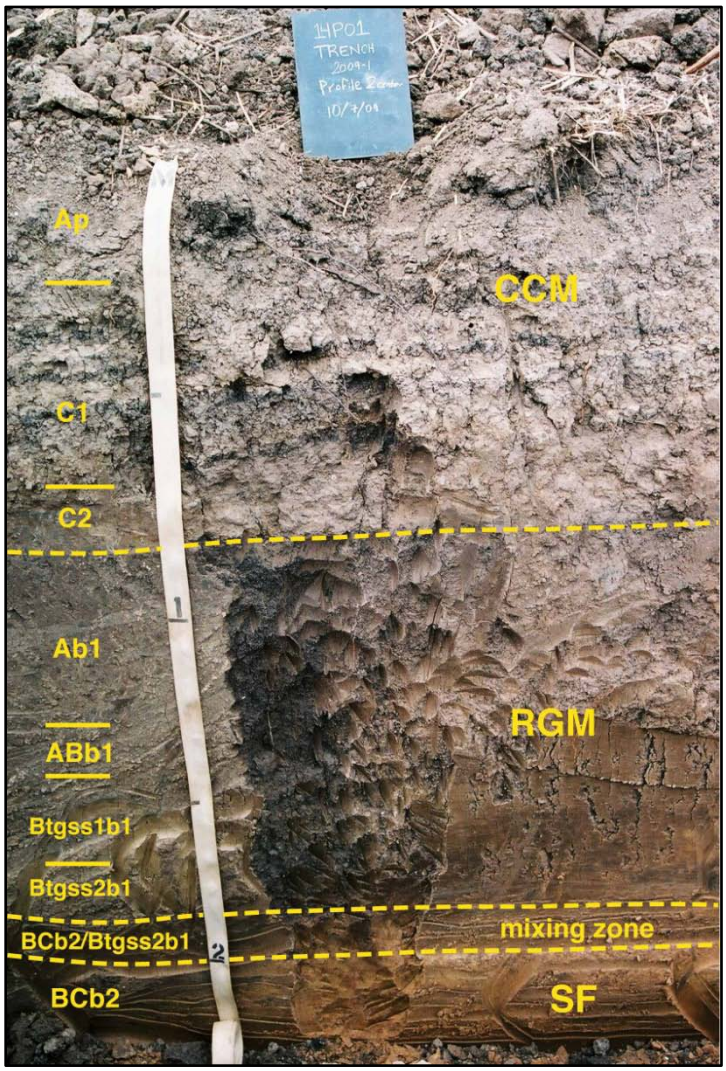

Figure 3.24 Stratigraphic units and soil horizons observed in Profile 2 on the north wall of BHT1 (adapted from Mandel et al. 2010). View is to the north.

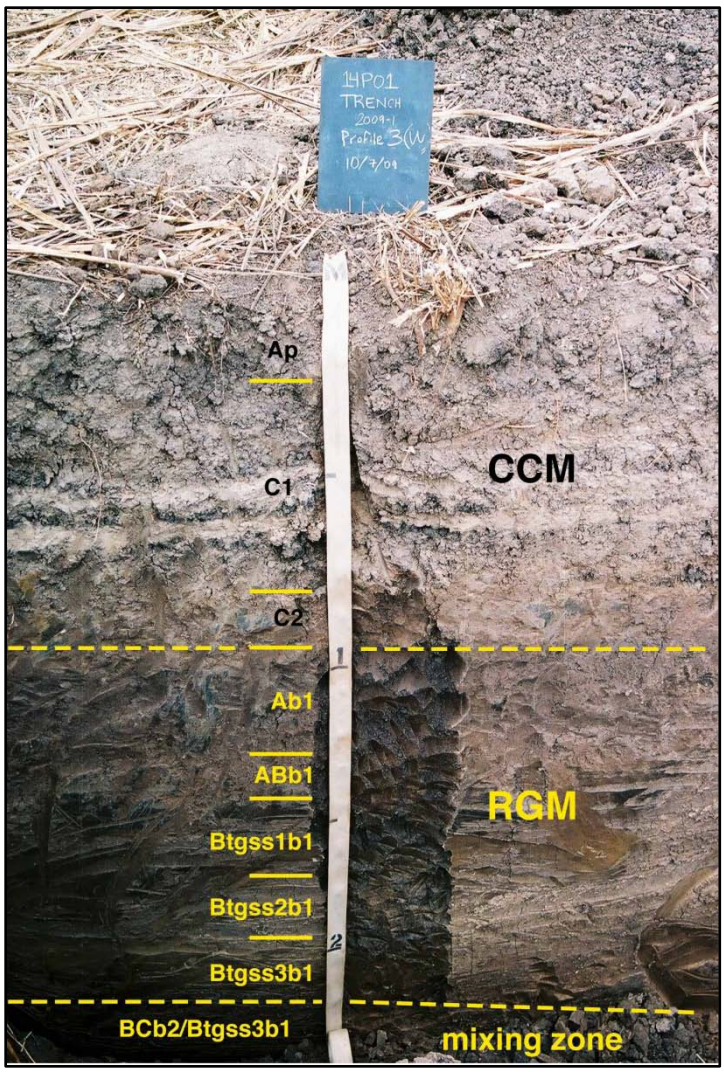

Figure 3.25 Stratigraphic units and soil horizons observed in Profile 3 in the north wall of BHT1 (adapted from Mandel et al. 2010). View is to the north.

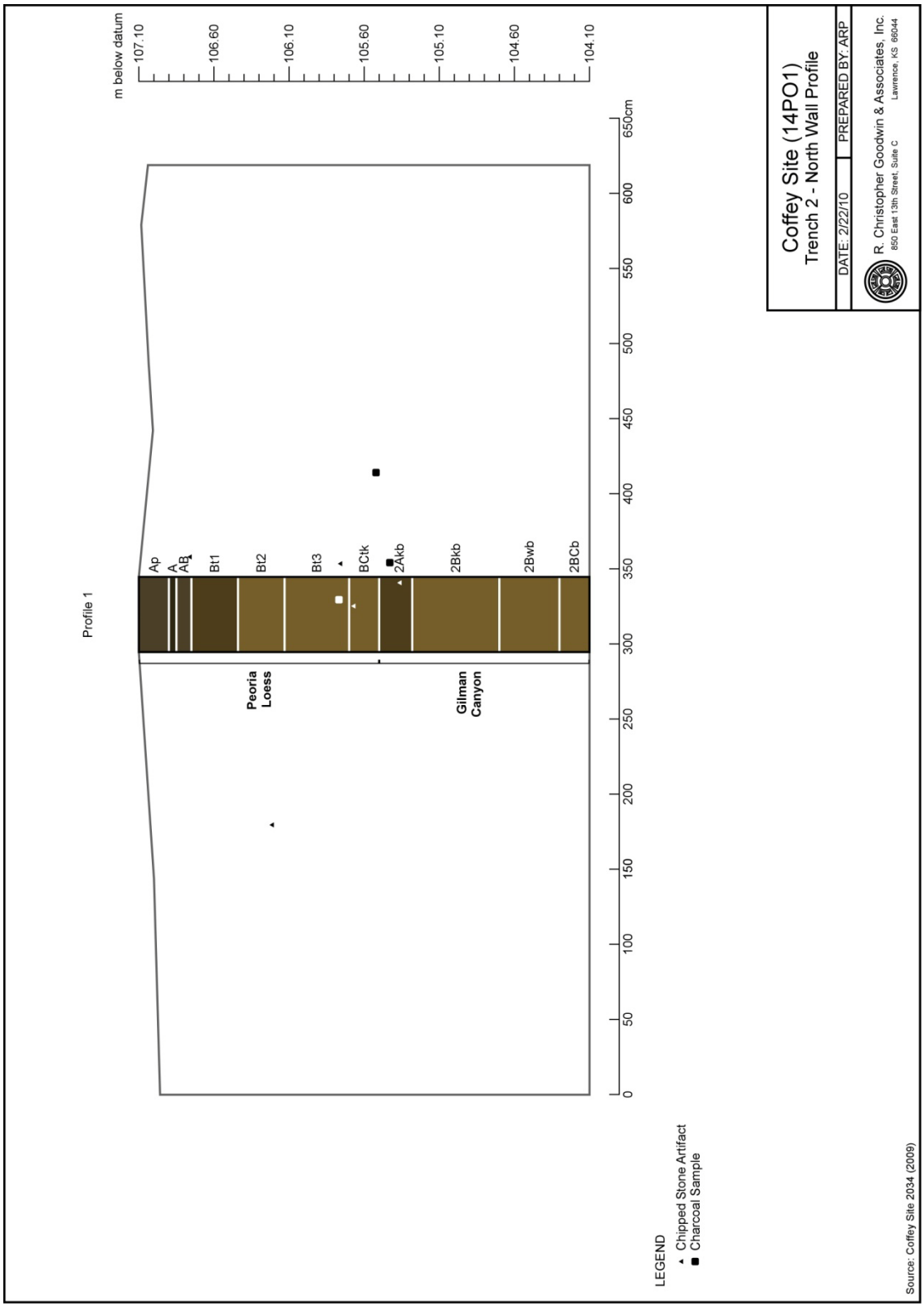

Figure 3.26 Diagram of the north wall of BHT2 showing the spatial pattern of the stratigraphic units and recorded cultural deposits, the soil horizons, and the radiocarbon age determined on a charcoal sample (adapted from Mandel et al. 2010).

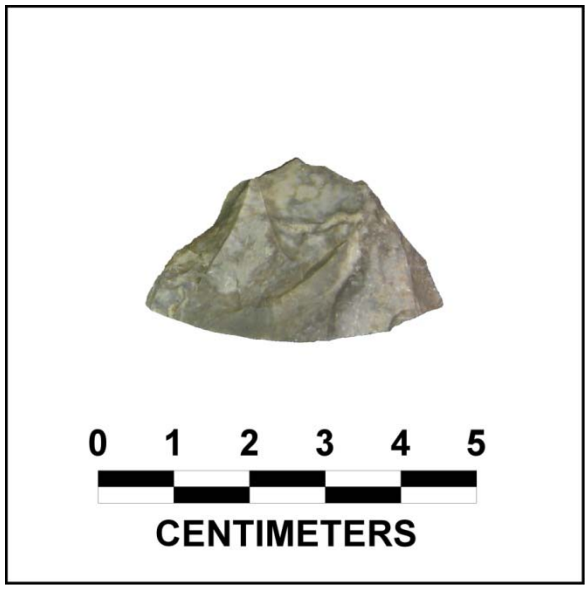

Figure 3.27 Specimen 14PO1/2010.1/0201 is a machinery-fractured Stage 2 biface fragment recovered from the backdirt of BHT2 (adapted from Mandel et al. 2010).

Table 3.10 Artifacts collected from BHT2.

Stratigraphic Unit	Horizon Designation	Artifact Type					
		Bulk Charcoal	CHST DEB	CHST TOOL	FCR	PDEB	*Total*
Peoria Loess	AB	--	1	--	--	--	***1***
	BCtk	--	1	--	--	--	***1***
	Bt2	--	1	--	--	--	***1***
	Bt3	1	1	--	--	--	***2***
Gilman Canyon Formation	2Akb	3	--	--	--	--	***3***
Unknown	Backdirt	--	62	2	4	1	***69***
	Totals	***4***	***66***	***2***	***4***	***1***	***77***

Summary

The Coffey site is favorably situated with respect to sources of fresh water, Permian chert outcrops, and proximity to upland, riverine, and riparian settings. Its topographic position suggests it may have been located along a prehistoric trail, perhaps near a ford that allowed easy travel across the Big Blue River. The projectile points collected from the surface of the Coffey site indicates nearly continuous occupation for nearly all of the Holocene (Appendix C). The favorable conditions at the site clearly made it attractive to many prehistoric peoples through time, but perhaps most especially during periods of

environmental stress. On the Central Plains, the Coffey site is unparalleled in terms of the richness, complexity, and the significance of its middle Holocene-age cultural deposits, a period most often noted for its paucity of material evidence.

Unfortunately, 14PO1 has been severely affected by erosion that has intensified greatly since the construction of Tuttle Creek Dam. Figure 2.3 presents the results of a GIS analysis of georeferenced historic aerial photos and the 1970–1975 investigations (Schmits 1981). Figure 2.3 documents the ongoing destruction of the site caused by the migration of the Big Blue River channel southwards and eastward of its 1950 position. Between 1969 and 2008, roughly 33 meters (108 feet) of cutbank and associated archeological content were lost to erosion. By 1991, Locality II had completely eroded away. As of November 2009, middle- and late-Holocene alluvial deposits comprise less than 10 percent of the landform-sediment assemblages preserved at the Coffey site. Less than 25 percent of the 1974–1975 excavation block is all that remains of KU Locality I.

This investigation identified and delineated a minimum of two new archeological components in the reduced Gunder Member and the Severance Formation. One radiocarbon date of 4910±15 ^{14}C yr BP (Table 2.1) was obtained on the reduced Gunder Member, although the date was obtained on a soil sample from CP3, a context unassociated with cultural remains (Figure 3.3). Thus, each of these units requires further assessment to characterize their archeological content, age ranges and cultural affiliations. There is little doubt that unless action is taken within the next several years, these newly identified archeological components are in danger of eroding away before adequate sampling and chronological characterization has occurred. On the other hand, due to the potential for vertical movement within the clay-rich sediments of the reduced Gunder Member, those sediments are less likely to yield the type of refined stratigraphic and contextual information available through further archeological sampling of the oxidized Gunder Member. Likewise, although the Severance Formation artifact concentration identified in the Bt2b horizon of Profile 1 in BHT1 is intriguing, the overall potential for a pre-Clovis occupation in the T-2 landform sediment assemblage is low.

Two radiocarbon dates of 5050±20 ^{14}C yr BP (F4) and 5135±20 ^{14}C yr BP (F5) (Table 2.1) obtained on charcoal samples leave little doubt that the features documented in this chapter are contained within Schmits' Unit III, newly reassigned to the oxidized Gunder Member of the DeForest Formation (Mandel et al. 2010:Chapter 5). The quality and complexity of the archeological data available within the oxidized Gunder Member at the Coffey site to date are unparalleled in terms of their integrity, research potential, and significance with respect to the Middle Holocene archeological record of the Central Plains. This investigation concludes that the oxidized Gunder Member deposits, previously identified as Unit III (Schmits 1980, 1981), still retain archeological data in contexts having integrity and that can yield information important in middle Holocene prehistory, in accordance with Criterion D of the National Register Criteria For Evaluation (36 CFR 60.4[a-d]).

The archeological deposits preserved in the oxidized Gunder Member sediments at the Coffey site represent a high resolution record of middle Holocene-age features and occupation surfaces associated with abundant cultural materials, attributes required for the investigation of domestic space, subsistence, culinary traditions, and seasonal patterns of resource use. These deposits offer a rare and valuable research opportunity to conduct fine-grained investigations of the middle Holocene archeological record of the Central Plains. A new excavation utilizing state-of-the-art methods is recommended in order to generate high resolution, three-dimensional provenience data required for evaluation of the cultural stratigraphy of the remaining deposits through controlled vertical and horizontal excavations and comprehensive refit analyses. A modern, full-scale data recovery effort directed at resampling the extant oxidized Gunder Member deposits preserved beneath the 1974–75 excavation block is strongly recommended before this extremely vulnerable and significant resource is lost forever.

CHAPTER 4: SUMMARY AND RECOMMENDATIONS

Recent geomorphological investigation at 14PO1 identified a complex mosaic of Holocene and late-Wisconsinan landform sediment assemblages at the site, which have demonstrated or potential archeological significance (Mandel et al. 2010). The newly identified buried cultural deposits in the Severance Formation and the reduced Gunder Member of the DeForest Formation need further assessment. Nevertheless, the significance of the cultural materials associated with the oxidized Gunder Member (Schmit's Unit III) is well established (Stein 1975), and the remnants of these deposits are still eligible for the NRHP. Finally, the archeological potential of the late Holocene-age Honey Creek Member of the DeForest Formation is simply unknown; the area south and west of the Coffey site proper has not been surveyed recently for archeological deposits.

A cluster of artifacts encountered in the Bt2b horizon of the Severance Formation during documentation of Profile 1 in BHT1 suggests the possibility of a pre-Clovis (pre-11,500 rcybp) occupation at the Coffey site preserved beneath the T-1 terrace. However, BHT2 demonstrated low geologic potential for *in situ* cultural deposits in sediments stored beneath the T-2 surface. Therefore, future investigations at Coffey should focus on remnants of the T-1 terrace, particularly the oxidized and reduced fills of the Gunder Member, as well as the Severance Formation.

As demonstrated by previous archeological investigations at the Coffey site (Schmits 1976, 1978, 1980, 1981), stratified Middle and Late Archaic Period cultural deposits are contained in middle- and late-Holocene alluvial deposits, respectively. These alluvial deposits comprise two channel fills beneath the T-1 terrace: oxidized Gunder Member and reduced Gunder Member. The deeper channel contains oxidized Gunder Member alluvium; it is overlain by a clay-rich channel fill of reduced Gunder Member alluvium. In addition, a small wedge of reduced Gunder Member containing stratified cultural deposits of unknown age is preserved at the north end of the cutbank in the vicinity of CP1. The two Holocene channel fills that contain stratified cultural deposits are separated by a large volume of late Pleistocene alluvium (Severance Formation) underlying the T-2 terrace. Schmit's Unit V appears to correlate with a

cumulic soil formed in the upper portion of the reduced Gunder Member. As the pre-settlement T-1 surface, "Unit V" may contain archeological content from the Late Archaic to Historic periods, but a surface assemblage, even a buried one, is insignificant in comparison to the stratified archeological record preserved elsewhere at the site. Schmit's Unit IV may correlate with the reduced Gunder Member, but this cannot be determined conclusively because Locality II was destroyed sometime prior to 1991.

At the present time, the chronology of the reduced Gunder Member is regarded as problematic, although a single radiocarbon date of 4910±15 ^{14}C yr B.P. (Table 2.1) and its stratigraphic position indicate a post-5000 B.P. date range. Although cultural deposits consisting of fire-cracked rock and chipped stone were newly encountered in the reduced Gunder Member during the 2009 investigations, no features, charcoal, or faunal remains were observed in any of the archeological contexts associated with this stratigraphic unit. Consequently, the research potential of the reduced Gunder Member appears to be less significant than the feature-rich archeological content of the oxidized Gunder Member.

To date, the quality and complexity of the archeological data available from the oxidized Gunder Member at the Coffey site are unparalleled in terms of their integrity, research potential, and significance with respect to the middle Holocene archeological record of the Central Plains. This investigation concludes that the oxidized Gunder Member deposits, previously identified as Unit III (Schmits 1980, 1981), still contain pre-5000 B.P. archeological data sets in contexts with integrity that have and continue to yield information important in middle Holocene prehistory as defined by Criterion d of the National Register Criteria For Evaluation (36 CFR 60.4[a-d]). The newly identified cultural deposits in the reduced Gunder Member and Severance Formation do not alter the eligibility of the Coffey site under Criterion d; if these units or others that have yet to be discovered are found to be eligible in their own right, the statement of significance that supports the listing of the Coffey Site in the National Register will require amendment.

Management Recommendations for 14PO1:

The National Register-listed Coffey site is adversely affected on a daily basis by stream bank erosion. That erosion is accelerated and exacerbated by the physical location of the site along the shoreline of Tuttle Creek Lake. Given the site's precarious setting and its advanced state of destruction, any effort directed at streambank stabilization would likely do more harm than benefit. Unless the Big Blue River changes course, the Coffey site inexorably will be destroyed by erosion. With that caveat in mind, the following list of resource management priorities is offered:

1. Fund an archeological mitigation project to salvage a high-resolution sample of the remaining cultural deposits preserved within the oxidized Gunder Member.
2. Evaluate the cultural deposits found in the Bt2b horizon of the Severance Formation at BHT1.
3. Evaluate the cultural deposits associated with the reduced Gunder Member, particularly in the area of Cutbank Profile 1, but also at BHT1.
4. Survey the cutbank south and west of the site boundaries for archeological evidence.
5. Update the National Register nomination form for the Coffey site.

Directions for Future Research

The Coffey site is the best exemplar of the middle Holocene archeological record in the Central Plains because of the extensive and pivotal archeological fieldwork conducted at the site during the 1970s (Wedel 1986). Given the rate of stream bank erosion along the Big Blue River, there is a compelling need to revisit the incredibly significant middle Holocene cultural deposits preserved at the site with fresh perspectives, updated field methods, and new analytical objectives before the cultural deposits are destroyed. The development of high resolution paleoenvironmental contexts for the site is one such high priority research topic.

Although the geomorphic and stratigraphic context of the cultural deposits at Coffey has been defined (Schmits 1980, 1981; Mandel et al. 2010), little is known about the nature of the environment

(vegetation and climate) during the periods of occupation at the site. The transition from the middle to late Holocene (ca. 5500-4500 yr B.P.) was a time of major climate change in the Great Plains (Mandel 2006). However, the precise timing and magnitude of environmental change at Coffey during and after this transition remains unknown. An analysis of phytolith and gastropod assemblages and stable carbon isotopes in soils and sediments from Coffey could address the following questions: What local environmental conditions (meso-environments and micro-environments) were available for human exploitation at the site? What plant resources were being utilized by site inhabitants? Was the environment stable after the Altithermal (post-5000 yr B.P.) or changing; if changing, were changes sufficient to have affected prehistoric adaptation patterns? Do changes in the environment appear to correlate with evidence of changes in subsistence patterns derived from the archeological record at Coffey?

The projectile points and other specialized bifaces recovered from the Coffey site during the 1970s investigations also merit further study. For example, the typological assignment of lanceolate projectile points recovered from Unit III to the Nebo Hill type instead of the Munkers Creek type has caused confusion for decades. Likewise, the identification of basally notched points recovered from Unit III as Calf Creek points has been the subject of much discussion (Andrews 1999:113; O'Brien and Wood 1998:138; Stites 2006). Many of the projectile point types recovered at Coffey have been recovered from stratified contexts found elsewhere in the Flint Hills or at the Big Eddy site in southwestern Missouri. Comparative typological research is needed to clarify the cultural affiliations of the various archeological contexts associated with Schmits' Units III and IV.

Refinement of the internal cultural stratigraphy and numerical chronology of the oxidized Gunder Member fill is another high priority research topic. The 1970– 1975 excavation results describe the stratigraphic record of Unit III as twelve, 5-15 cm thick occupation levels (Horizons III-1 to III-12) separated by sterile alluvium (Schmits 1976, 1978, 1980, 1981). The archeological content investigated in the 1974–1975 excavation block reportedly was confined to Horizons III-1 to III-3, which were correlated with strata first identified in the 1973 south excavation block because of a red oxidized band interpreted

as Horizon III-4, a key stratigraphic marker identified throughout the excavations (Schmits 1981). In this study, the overlapping vertical distributions of features documented directly beneath the 1974–1975 KU excavation block suggest that the oxidized Gunder Member stratigraphy has more characteristics of a palimpsest than are implied by the horizon-level stratigraphy that emerged as a result of the 1970–1975 fieldwork. Does the cultural stratigraphy within the oxidized Gunder Member fall within discrete occupation levels separated by deposits of sterile alluvium, or are the cultural deposits a series of sealed or overlapping palimpsests with variable horizontal and vertical distributions? How would the knowledge that the cultural deposits are palimpsests of numerous, small, overlapping occupational episodes instead of single, site-wide occupational episodes alter our understanding of the archeological content of the site? To address these issues, a new excavation that utilizes sub-centimeter vertical and horizontal control to generate high resolution spatial data set for features, associated artifacts, and natural stratigraphic markers (redoximorphic features) is recommended. These stratigraphic issues cannot be resolved with reference to the extant excavation data because those data were collected without absolute vertical control. Likewise, chronological control should be established through ample AMS radiocarbon dating of charred annual plant remains or animal bones because a chronology based on wood charcoal dates is too coarse to characterize the high-resolution stratigraphic record preserved at the Coffey site. Such research will clearly require the involvement of botanical and faunal specialists.

The archeological analyses of the feature cluster within the oxidized Gunder Member, albeit brief, also illustrate the interpretive potential of a technologically-oriented, attribute-based, contextual approach to the analysis of feature contents. Although relatively little attention has been paid to feature contents from the Coffey site to date, features offer the potential to investigate the preparation and consumption of individual meals and associated activities. Subsistence data investigated at an event-scale resolution surely has untapped analytical potential that has yet to be realized. This study raises questions about the homogeneity and validity of the internal stratigraphy of the oxidized Gunder Member, questions that in turn challenge assumptions about the homogeneity of the associated cultural occupations. By targeting the contents of individual features, it should be possible to gain a better perspective on intra-site

variability in subsistence and seasonality than can be achieved using a model of horizon-level "occupation" assemblages. The latter are of dubious contextual association and unresolved duration.

Finally, the analytical potential of refitting (Hofman 1992) for establishing the spatial relationships of features and the vertical integrity of occupation levels within the feature-rich oxidized Gunder Member is wholly unexplored. Given the lack of screening of non-feature sediments excavated during the 1970s, the potential for using excavated collections to address intra-site spatial patterning is limited to comparisons of feature contents and small samples of piece-plotted artifacts. In reality, the most interesting evidence of activities likely was deposited in areas around and between those features immediately above occupation surfaces like F1 and F6. Unanalyzed heavy fraction flotation / water-screen samples from the 1972–75 excavations may yield tool production and maintenance debris undetected by prior investigations. Comprehensive refitting and spatial analyses of the Middle Archaic cultural deposits preserved at the Coffey site cannot be executed without access to high resolution, three-dimensional data set. This compelling reason advocates for data recovery of the middle Holocene cultural deposits preserved within the oxidized Gunder Member before this highly significant and National Register-listed resource is consumed by the Big Blue River.

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APPENDIX C

PAUL REUST COLLECTION

On November 4, 2009 Mr. Paul Reust and his daughter, Ms. Julie Caffrey, of Frankfort, Kansas visited RCG&A crew members working at the Coffey site. Mr. Reust brought along a frame of artifacts including a Folsom point of Alibates agatized dolomite that he reportedly found on the surface of the high (T2) terrace at the site (Figure C-1). Mr. Reust's friend, Orville Schreiner (deceased), reportedly discovered a nearly identical Folsom point, also of Alibates agatized dolomite, in the same area of the site. RCG&A employees photographed the frame of artifacts and discussed the possibility of visiting Mr. Reust at his home to view more of his extensive artifact collection. Mr. Reust extended an open invitation. Dr. Jack Hofman, Ms. Janice McLean, and Ms. Shannon Ryan visited Ms. Caffrey and Mr. Reust at his home in Frankfort on December 18, 2009.

Figure C-1. Photograph of a complete Folsom point that Mr. Reust reportedly discovered in 1959 at Site 3 (Coffey Site, 14PO1). The artifact is made from Alibates agatized dolomite, and compares favorably to replica Folsom points made by recent flintknappers (Hofman 1994:34). Measurements (cm): 3.84 length, 2.14 width, .503 thickness. There is light grinding along one edge.

Mr. Reust has an extensive artifact collection gathered from sites located in the general vicinity of Frankfort, Kansas. Many of the more impressive artifacts are on display in large (mostly glassless) custom frames that fill the living and dining room walls of his home. The frames once were displayed at a liquor store that Mr. Reust owned and operated for many years in Frankfort before his retirement. For this reason, many people have been aware of Mr. Reust's collection for many years.

To organize his collection, Mr. Reust recorded the sites from which his artifacts were collected by labeling each artifact in accordance with a numeric key that relates site locations to attributes such as

landowner names, place names, roads, and legal descriptions (Figure C-2). Although Mr. Reust's collection is simply too large to document in a single outing, or even several, our visit enabled us to gain a general understanding of the collection. We systematically documented the presence of Coffey site artifacts in the 28 display frames hung in Mr. Reust's home, and collected presence/absence data on key artifact types visible in each frame; this information is tabulated in Table C-1. Each display frame, artifacts labeled 3 (Reust Site Number 3 = Coffey site / 14PO1), and other artifacts of special interest were photographed (see attached).

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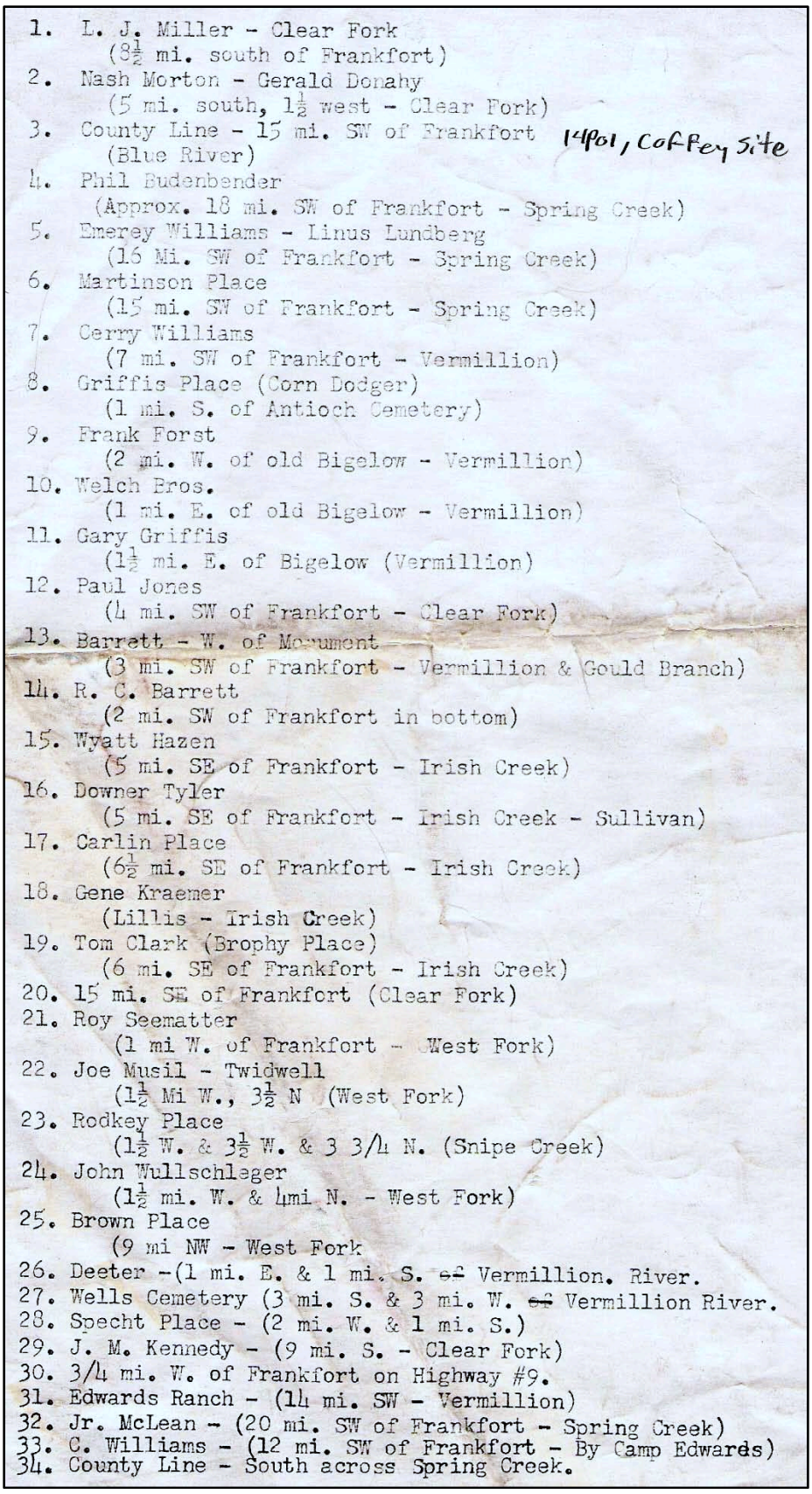

1. L. J. Miller - Clear Fork
   (8½ mi. south of Frankfort)
2. Nash Morton - Gerald Donahy
   (5 mi. south, 1½ west - Clear Fork)
3. County Line - 15 mi. SW of Frankfort 14P01, Coffey Site
   (Blue River)
4. Phil Budenbender
   (Approx. 18 mi. SW of Frankfort - Spring Creek)
5. Emerey Williams - Linus Lundberg
   (16 Mi. SW of Frankfort - Spring Creek)
6. Martinson Place
   (15 mi. SW of Frankfort - Spring Creek)
7. Cerry Williams
   (7 mi. SW of Frankfort - Vermillion)
8. Griffis Place (Corn Dodger)
   (1 mi. S. of Antioch Cemetery)
9. Frank Forst
   (2 mi. W. of old Bigelow - Vermillion)
10. Welch Bros.
    (1 mi. E. of old Bigelow - Vermillion)
11. Gary Griffis
    (1½ mi. E. of Bigelow (Vermillion)
12. Paul Jones
    (4 mi. SW of Frankfort - Clear Fork)
13. Barrett - W. of Monument
    (3 mi. SW of Frankfort - Vermillion & Gould Branch)
14. R. C. Barrett
    (2 mi. SW of Frankfort in bottom)
15. Wyatt Hazen
    (5 mi. SE of Frankfort - Irish Creek)
16. Downer Tyler
    (5 mi. SE of Frankfort - Irish Creek - Sullivan)
17. Carlin Place
    (6½ mi. SE of Frankfort - Irish Creek)
18. Gene Kraemer
    (Lillis - Irish Creek)
19. Tom Clark (Brophy Place)
    (6 mi. SE of Frankfort - Irish Creek)
20. 15 mi. SE of Frankfort (Clear Fork)
21. Roy Seematter
    (1 mi W. of Frankfort - West Fork)
22. Joe Musil - Twidwell
    (1½ Mi W., 3½ N (West Fork)
23. Rodkey Place
    (1½ W. & 3½ W. & 3 3/4 N. (Snipe Creek)
24. John Wullschleger
    (1½ mi. W. & 4mi N. - West Fork)
25. Brown Place
    (9 mi NW - West Fork
26. Deeter -(1 mi. E. & 1 mi. S. ~~of~~ Vermillion. River.
27. Wells Cemetery (3 mi. S. & 3 mi. W. ~~of~~ Vermillion River.
28. Specht Place - (2 mi. W. & 1 mi. S.)
29. J. M. Kennedy - (9 mi. S. - Clear Fork)
30. 3/4 mi. W. of Frankfort on Highway #9.
31. Edwards Ranch - (14 mi. SW - Vermillion)
32. Jr. McLean - (20 mi. SW of Frankfort - Spring Creek)
33. C. Williams - (12 mi. SW of Frankfort - By Camp Edwards)
34. County Line - South across Spring Creek.

Figure C-2. A scanned duplicated of Mr. Reust's site list / arrowhead key.

Table C-1. Summary table that outlines the contents of Mr. Reust's collection by frames observed on December 18, 2009.

Frame #	Site 3 - Coffey Site	Site 32 - Biface Cache	Gunflints	Catlinite	Beveled Knife	Bannerstones	Corner Tangs (ca. 4000-2500 BP)	Grooved Axes	Paleo Points	Frame Notes
1				x	x			x		Site 28: Grooved Axe, n=1.
2	x			x					x	Site 2: KRF Beveled Knife.
										Site 23: Allen Base Fragment.
3										
4	x			x		x		x	x	Site 1: Scottsbluff Point (top row) - Brown Mottled Chert, L=8.42cm, W=3.42cm (shoulder), Basal Width=2.06cm, Stem length=2.16cm.
										Bannerstone Length = center 6.58cm, thickness ~3.2cm, partially reconstructed, subtle concavity, possible attempt to drill top, bottom-none.
										Site ? Paleobase cf. Allen, L=1.7cm, W=1.96cm, Basal Depth=0.4cm; Several bases and a Folsom, 1 mile W of Old Bigalow, go S Windy Rd, stop at Tuttle Creek - CRP ground.
										Site 22: Grooved Axe, n=1.
										Site 29: Grooved Axe, n=1.
5	x			x			x		x	Munkers Creek Knives @ top of frame
										Catlinite Pendant from Site 10
										Flake Blank Lanceolate, paleo, (pink chert) from WY or CO per PR
										Site 3: Corner Tang, n=1.
6	x			x					x	Site 9: (cross bridge, Vermillion Rd., drive south, S side of Rd.), lower left corner Folsom base, florence chert, 1 ear broken, fluted on both faces (only one face visible, glued to felt) L=1.82cm W=2.15cm Basal Width=2.24cm, 8-9 flakes per cm on lateral margin, thickness not possible to measure.
										Site 17: complete lanceolate Plainview/Goshen, brown mottled chert, L=7.3cm, W=2.62cm, Basal Width = 2.21cm.
7	x									
8	x			x						
9				x						
10	x			x						
11	x								x	Site 3: SHSC Big Knife? Cf. Agate Basin/Hell Gap, L=12.83cm W=2.68cm, Basal Width=1.90cm. Paul's dad reportedly found the artifact on a gravel bar in the river below the Coffey Site.
										Site 12: cigar-shaped Boatstone (Hematite) L=13.23cm, W=2.06cm, Thickness=1.4 cm
12	x			x						Site 3: artifact glued to top of frame, no others observed.
13	x			x						
14	x			x			x		x	Site 1: Catlinite - Grooved Pipe Preform.
										Site 10: lanceolate - Allen/Dalton-ish- lanceolate, basally thinned.
										Site 3: Corner Tang, n=1.
15	x	x		x			x			Site 3: Corner Tang, n=1.
16	x		x	x			x			Site 3: Corner Tang, n=1
										Site 31: 4 Gunflints and hematite; Identified by Carlisle Smith.
17	x			x						
18		x	x	x						Site 31: 1 Gunflint.
19	x									
20	x			x						Site 3: Folsom-like unfluted specimen; JLH close-up
21	x						x			Site 7: Corner Tang, n=1.
										Site 26: Corner Tang, n=1.
22	x						x	x	x	Site 5: Nice Dalton.
										Site 2: Corner Tang, n=1.
										Site 29: Grooved Axe, n=1; 1 at top of frame.

Frame #	Site 3 - Coffey Site	Site 32 - Biface Cache	Gunflints	Catlinite	Beveled Knife	Bannerstones	Corner Tangs (ca. 4000-2500 BP)	Grooved Axes	Paleo Points	Frame Notes
23	x							x		n = 1; 4 Munker's Creek Knives.
										Site 12: Grooved Axe, n=1.
24	x									
25	x								x	Site 22: Dalton Adze.
										Site 5: Lanceolate (above #1 Munker's Creek knife).
26	x						x			Site 4: Allen Base - behind glass, Permian chert.
										Site ? Corner Tang, n=1
27	x									
28	x									Frame 28 is not hung on the wall.
										Site 3: n=2 specimens.
										Folsom Point - cf. McCormick replica per JLH.
Bedroom Box								x		Site 2: Grooved Axe, n=1; Large flat Biface.
										Site 24: Grooved Axe, n=1, Bill Motsky.
										Site ? Grooved Axe, n=1, Donated to PR.

Paul Reust Collection

Frame 4

Two projectile points from Coffey site.

Paul Reust Collection

Frame 5

Projectile point from Coffey Site.

Paul Reust Collection

Frame 5

Projectile point [R3-14] from Coffey Site.

Paul Reust Collection

Frame 5

Two projectile points from Coffey Site.

Paul Reust Collection

Frame 5

Projectile point from Coffey Site.

Paul Reust Collection

Frame 5

Alternately beveled bifacial knife from Coffey Site.

Paul Reust Collection

Frame 5

Projectile point from Coffey Site.

Paul Reust Collection

Frame 5

Corner tang knife from Coffey Site.

Paul Reust Collection

Frame 5

Two projectile points from Coffey Site.

Paul Reust Collection

Frame 5

Two projectile points from Coffey Site.

Paul Reust Collection

Frame 5

Projectile point from Coffey Site.

Paul Reust Collection

Frame 8

Projectile point from Coffey Site.

Paul Reust Collection

Frame 8

Projectile point from Coffey Site.

Paul Reust Collection

Frame 8

Projectile point from Coffey Site.

Paul Reust Collection

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Projectile point from Coffey Site.

Paul Reust Collection

Frame 8

Projectile point from Coffey Site.

Paul Reust Collection

Frame 11

Two Early Archaic side-notched projectile points from Coffey Site and a hematite boatstone from Site 12.

Paul Reust Collection

Frame 11

Agate Basin / Hell Gap
Paleoindian projectile point from the Coffey Site.

Paul Reust Collection

Frame 14

Beveled knife and corner tang knife from Coffey site.

Paul Reust Collection

Frame 16

Early Archaic side-notched projectile point from Coffey Site.

Paul Reust Collection

Frame 16

Multiple projectile points from Coffey Site. Two gunflints and hematite from Site 31.

Paul Reust Collection

Frame 16

Multiple projectile points / knives from Coffey Site. Two gunflints and hematite from Site 31.

Paul Reust Collection

Frame 16

Three projectile points from Coffey Site.

Paul Reust Collection

Frame 16

Three projectile points from Coffey Site.

Paul Reust Collection

Frame 16

Two projectile points from Coffey Site.

Paul Reust Collection

Frame 16

Three projectile points from Coffey Site.

Paul Reust Collection

Frame 16

Projectile point from Coffey Site.

Paul Reust Collection

Frame 16

Projectile point/knife from Coffey Site.

Paul Reust Collection

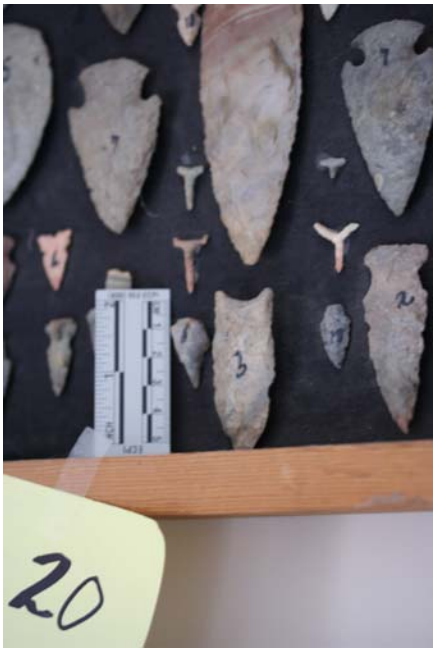
Frame 16

Multiple projectile points and corner tang knife from Coffey Site.

Paul Reust Collection

Frame 16

Close-up of a corner tang knife and projectile point from Coffey Site.



Paul Reust Collection

Frame 20

Unfluted lanecolate projectile point from the Coffey site.

Paul Reust Collection

Frame 21

Corner tang knife from Coffey site.

Paul Reust Collection

Frame 21

One projectile point from Coffey site.

Paul Reust Collection

Frame 23

Subtriangular projectile point preform from Coffey Site.

Paul Reust Collection

Frame 28

Folsom point of Alibates agatized dolomite reportedly collected from the T2 surface of the Coffey Site.

Paul Reust Collection

Garage Storage

Hafted knife from Coffey site.